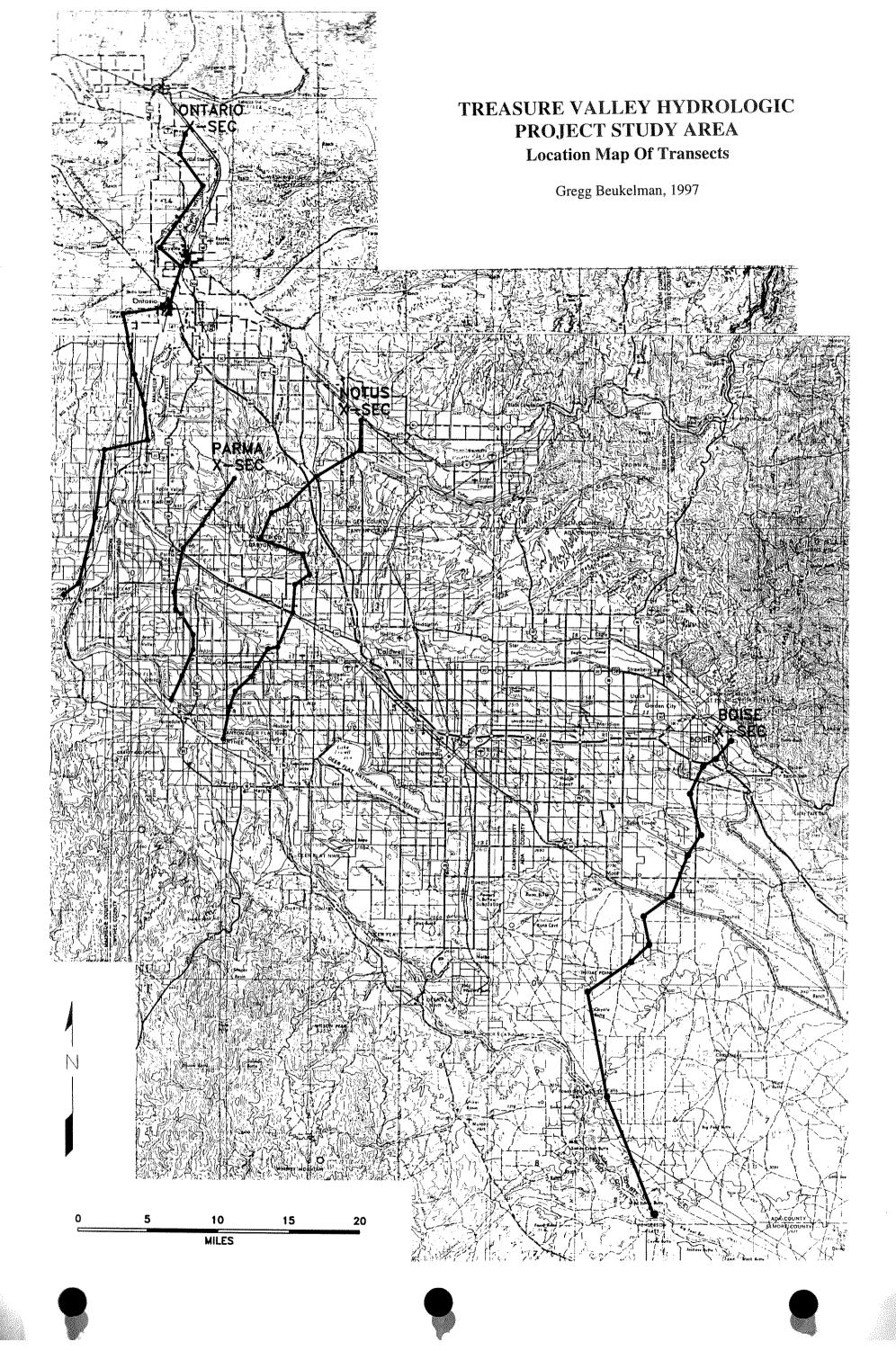
TREASURE VALLEY HYDROLOGIC PROJECT

Geological and Geophysical Framework of the Treasure Valley

Reports on the Ontario, Parma, Notus and Boise Cross Sections

Gregg Beukelman, 1997



Cross section of the Treasure Valley in the Ontario area for the TVHP (Treasure Valley Hydrologic Project):

Notes on Geology of the Ontario area, Payette and Canyon Counties, Idaho and Malheur County, Oregon

by Gregg Beukelman June 14, 1997 Department of Geosciences, Boise State University Boise, Idaho 83725

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Introduction

The report and enclosed data are a preliminary compilation of information along a transect extending NNE-SSW from just south of the town of Weiser, southwest to the Adrian, Oregon area (Figs. 1a and 1b). The intent of this report is to show the nature of the Late Cenozoic stratified sediments in the upper portion of the western Snake River Plain near it's western extent (Figs. 2a, b, and c). Included for each well along the transect are the well owner, Land Office Grid coordinates, surface elevation (± 10 feet), and diagrams of well construction and lithology (attached). Lithologies, taken from well drillers' reports on record at the Idaho Department of Water Resources and the Boise office of the U. S. Geological Survey for the wells completed in Idaho and the Oregon Water Resources Department for those in Oregon, are plotted in detail where distinctive units of lithologic or hydrogeologic significance are well documented by the driller. Individual drillers' reports are attached to the report should the user wish more detail. Also included is a geologic cross section drawn to show correlatable distinctive lithologic and hydrogeologic boundaries encountered in each well. A 1:100,000 map of the area Fig. 1) is included showing the route of the transect (A-A'), individual well owners and surface geology taken from: Ferns and others, (1993), Othberg and Stanford (1992), Brooks, McIntyre, and Walker (1976), and Savage (1961).

Methods

The cross section included is a graphical presentation of subsurface lithologies based on water well drillers reports and deep exploration wells. Wells along the transect were selected to ensure maximum section coverage. Water well drillers reports were obtained from the Idaho Department of Water Resources for the wells in Idaho and from the Oregon Water Resources Department by means of their Internet-based Grid program for the wells in Oregon. For each well included in the profile (1:24,000 horizontal) the stratigraphic section and well construction, as reported in the drillers logs, were plotted at a vertical scale of 1:1,200 (see attached sheets) and the well completion data noted. Correlations were made at this scale and all data digitized and reduced to produce the cross section in figure 2. Accuracy of all elevations is probably ± 10 feet. No attempt has been made to correlate the upper contact of the lacustrine claystone because of very sparse data. However this contact occurs at about 1300-ft. elevation in the Rube Bolles #1 deep exploration well and about 1700-ft. elevation in the Kiesel Estates well based on a marked decrease in the electrical resistivity signature.

Structure

The structural nature of this area of the plain is inferred to be a normal fault-bounded graben. Faults are thought to be older structures owing to their lack of surface expression and the absence of offset in Pleistocene gravels and overlying Bonneville Flood deposits. Evidence of a major south facing fault near the southern end of the transect includes an approximate 120 ft. offset of the boundary between the overlying brown sediments and the blue sediments below. Additionally, two gravel units that occur at about 2100-ft. elevation in the Brown well are faulted against a monotonous clay in the City of Adrian well (fig. 2a). A small graben occurs in the vicinity of the confluence of the Snake River and the Payette River. This structure is evinced by an offset of the blue-brown sediment boundary (about 110 ft.). Another small graben (offset of less than 40 ft.) occurs near the north end of this transect (fig. 2c). None of these structures has been mapped on any existing surface geologic map and are here based almost exclusively on offset of the blue-brown sediment boundary. Although some of the recognized offset is likely the result of downwarping of sediments during diagenesis, the overall horizontal nature of the blue-brown boundary (0.03° between Malheur Experimental Station well and the American Fine Foods well) suggests that downwarping has been complicated by faulting.

Stratigraphy

The sedimentary section contains Late Cenozoic fluvial and lacustrine deposits and an interbedded basalt units. Basalt is not noted in any of the water wells and can be seen only in the Kiesel Estates well where the first occurrence is at -1600 ft. and in the Ore-Ida well where the first occurrence is at -2450 ft. and the basalt basement is at -6050 ft. (Minus signs indicate elevation below sea level). Surficial deposits include modern flood plain deposits, Bonneville Flood slackwater fine sediments, gravels of Pleistocene age, and older Tertiary age sediments. A typical stratigraphy in the upper potion of the section includes gravels overlain by up to 40 feet of sands and clays. Beneath the gravels is a complex sequence of interfingering gravels, sands, and clays that are interpreted to represent fluvial and shallow lacustrine deposits. This section contains an upper portion in which sediments are commonly some shade of brown, tan, or yellow and a deeper portion having sediments that are described as blue of grey in drillers logs. North of the fault that occurs near the southern extent of the transect, the boundary between these colordefined units is at 2230-ft \pm 50 ft elevation except within the graben near the Snake River (1970ft in the Mills well). The brown-colored unit is up to 130 feet thick beneath the uplands northeast the Snake River, but has apparently been mostly removed by erosion near the Snake River.

The nature of this brown-blue boundary is not well understood but is believed to reflect differences in depositional environment. The blue colored sediments are thought to be an indication of a chemically reducing depositional environment characteristic of lake deposits. The brown colors are more likely caused by oxidation of iron-bearing minerals under unsaturated conditions. Thus, these sediments are thought to represent alluvial, fluvial, and lake margin deposits which would be more apt to be oxidized. Alternatively, it is also possible that recharge by oxygenated waters percolating through reduced (blue) iron minerals may oxidize formerly blue-gray colored deposits. Groundwater that is high in dissolved iron can be associated with the oxidation of reduced iron minerals at a contact between oxidizing and reducing conditions. In

the area of this transect and others completed across the western Snake River Plain, evidence such as the uniform elevation of the contact suggests that this brown-blue contact is the result of original diagenesis. Therefore, this oxidation/reduction contact may well be useful for geologic interpretation of depositional environments.

North of the major fault in the Adrian area, the deeper part of the sedimentary section is composed of over 4000 feet of monotonous lacustrine claystone. The upper contact of this section is at 1700-ft or 1400-ft elevations as interpreted from the electrical resistivity logs of the Kiesel Estates and Rube Bolles #1 deep exploration wells respectively. This upper contact of this unit is the top of the pro-delta mudstone facies interpreted by Wood (1997). The geometry of the upper contact of this claystone cannot be determined from this cross section as only the deep exploration wells penetrate it. Included within the claystone near its base are several interbedded basaltic flows and tuffs.

Hydrogeology

The static water level in wells along this transect vary only 100 feet in elevation. All of the wells along this transect are completed in the upper portion of the blue sediments and behave as confined of semiconfined. Discharge from wells ranges from 10-55 gpm in the southernmost four wells with a general increase in those to the north (90-500 gpm) with two exceptions. The Roberts Farm well was drilled to a depth of about 400 ft. and is dry and the Mills well adjacent to the Snake River drilled to about 520 ft. and producing 8-10 gpm.

References

- Brooks, H.C., McIntyre, J.R., and Walker, G.W., 1976, Geology of the Oregon part of the Baker 1° by 2° quadrangle, State of Oregon, Department of Geology and Mineral Resources.
- Ferns, M.L., and Brooks, H.C., 1993, Geologic map of the Vale 30X60 minute quadrangle, Malheur county, Oregon and Owyhee county, Idaho, State of Oregon, Department of Geology and Mineral Resources.
- Idaho Department of Transportation, 1994, 30 X 60 minute series topographic maps of Boise and Weiser, Idaho, scale 1:100,000.
- U. S. Geological Survey, 1993, 30X60 minute series topographic maps of Vale, Idaho-Oregon and Brogan, Idaho-Oregon, scale 1:100,000.
- Idaho Department of Water Resources, 1997, microfiche file of drillers reports, Orchard Street Office.
- Oregon Water Resources Department, 1997, Files of drillers reports via Internet Grid program.

Othberg, K.L., and Sanford, L.R., 1992, Geologic map of the Boise Valley and adjoining area, western Snake River Plain, Idaho: Idaho Geological Survey, Geologic Map Series, scale 1:100,000.

Savage, C.N., 1961, Geology and Mineral Resources of Gem and Payette counties, County report no. 4, State of Idaho, Idaho Bureau of Mines and Geology.

Wood, S.H., 1997, Structural contour map of the top of Miocene basalt basement rocks, western Snake River Plain, Idaho: Report for Idaho Department of Water Resources (2 sheets, 1:100,000).

Figures and enclosures

Figure 1a & b Map (1:100,000) showing cross section transect, wells used in cross

section, surficial geology, and location of deep exploration wells.

Figure 2a, b, and c Cross section of geology and hydrogeology across the western Snake River

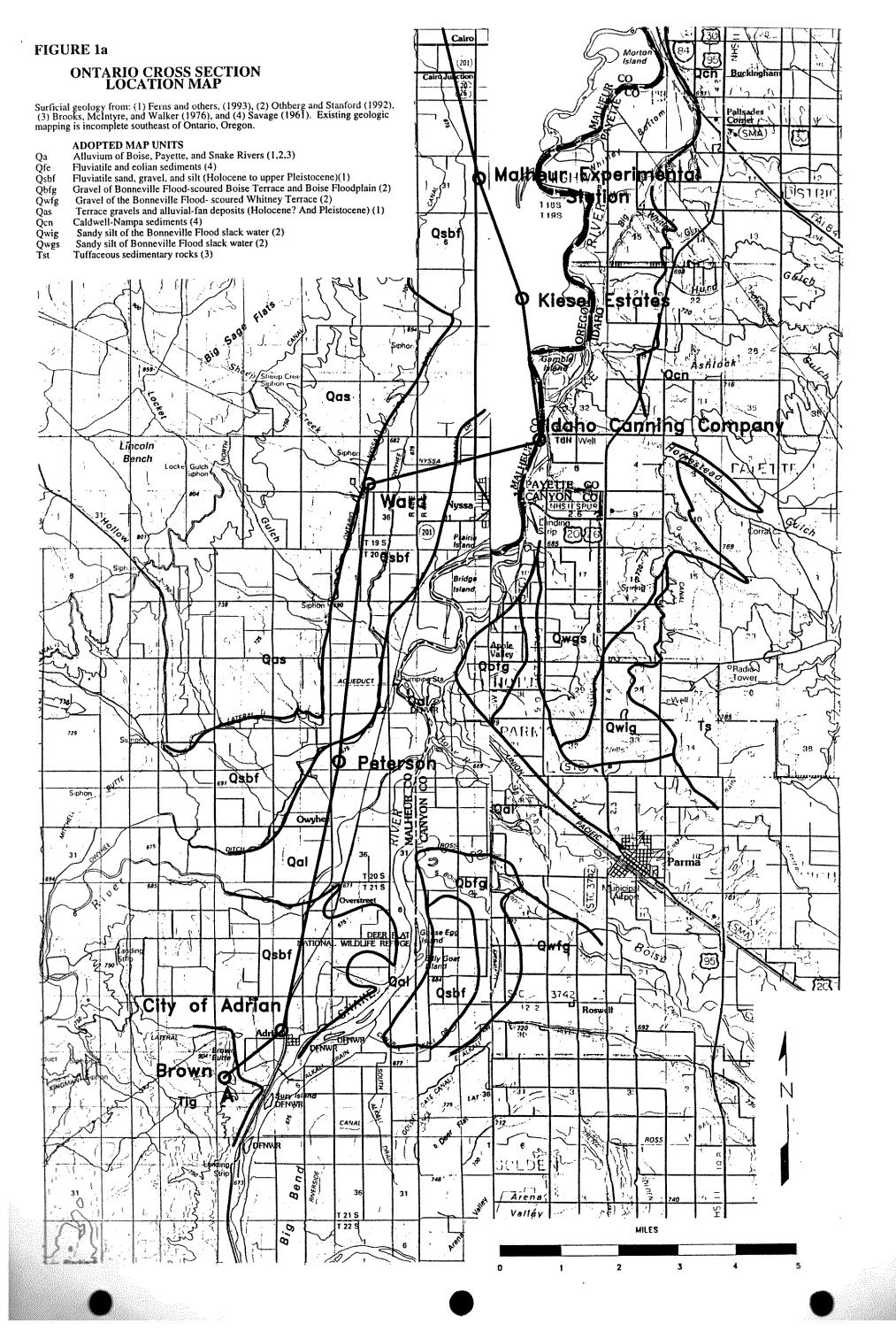
Plain in the Ontario, Oregon area.

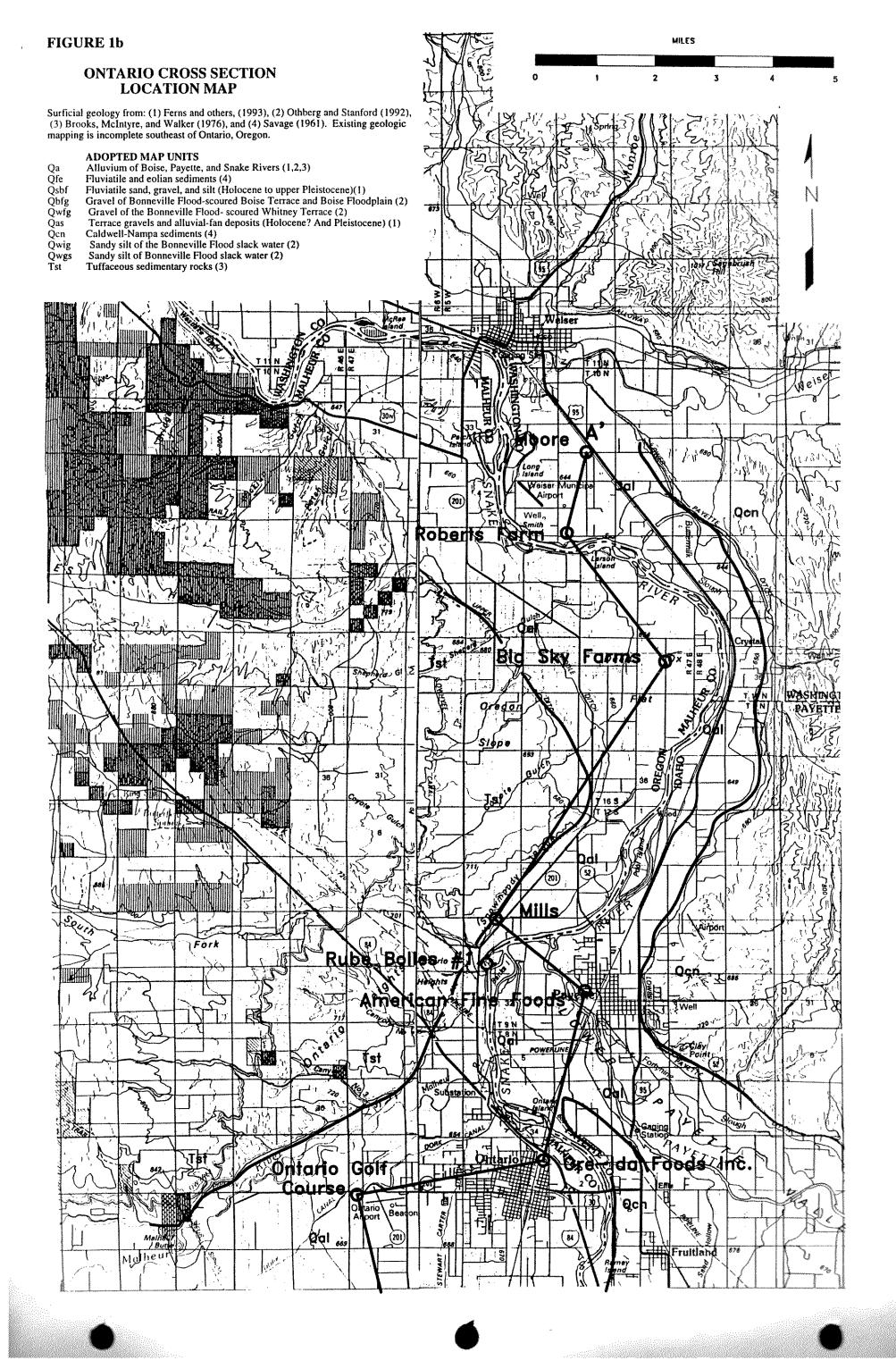
Figure 2d Legend for cross section

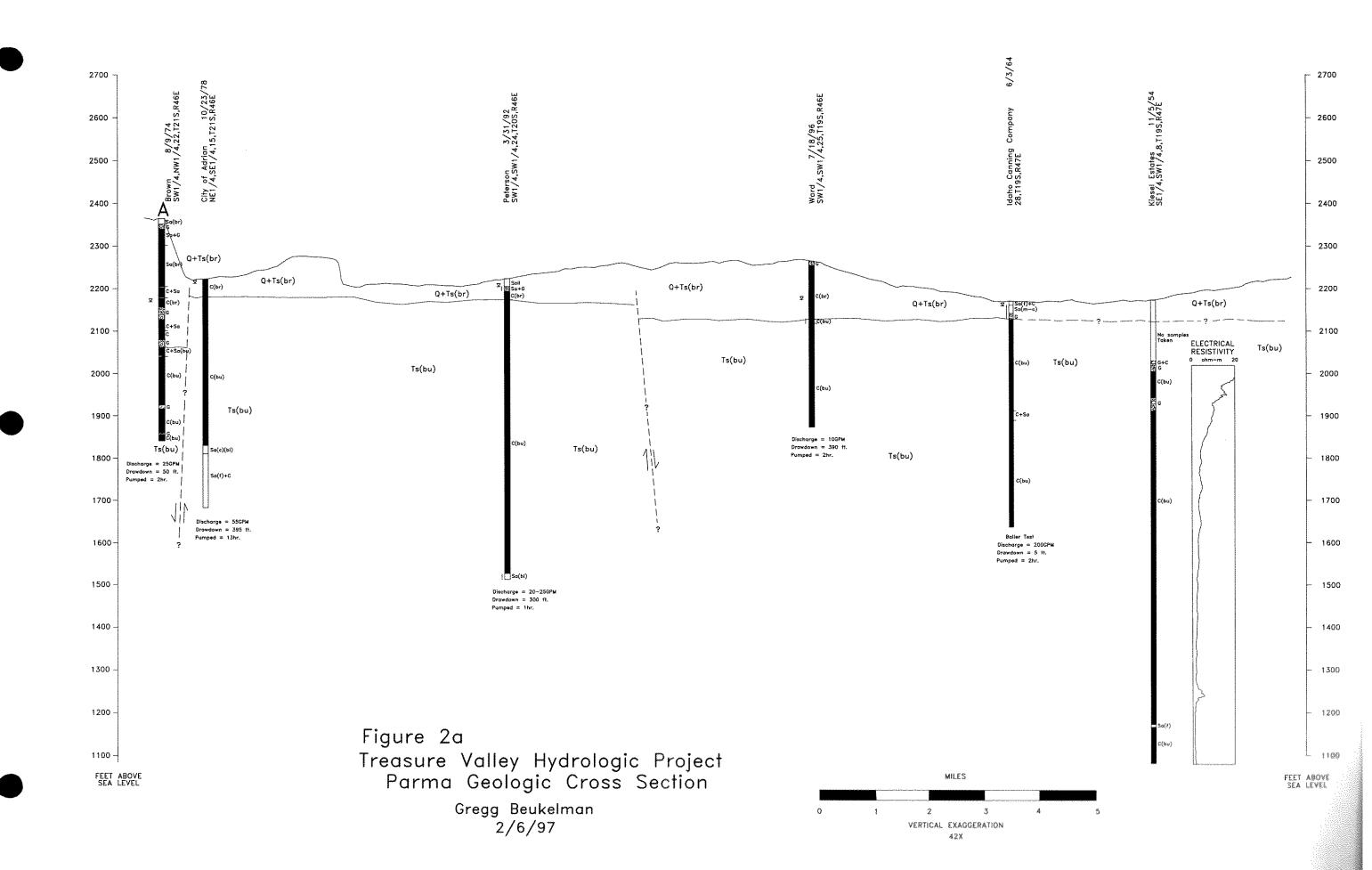
Attached Fifteen panels of wells used in cross section showing lithology, well

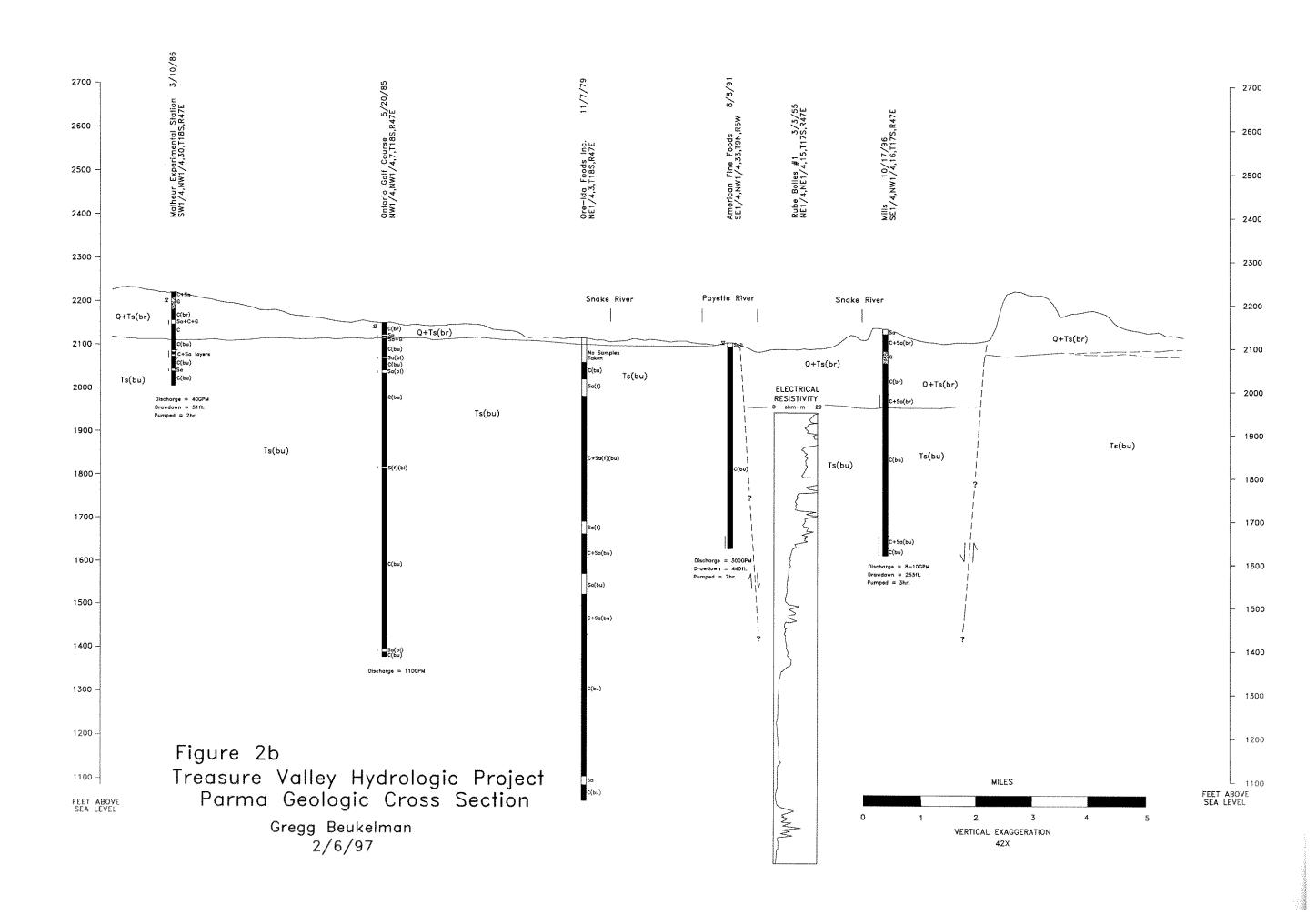
construction, and completion data.

Attached Drillers reports of selected wells.









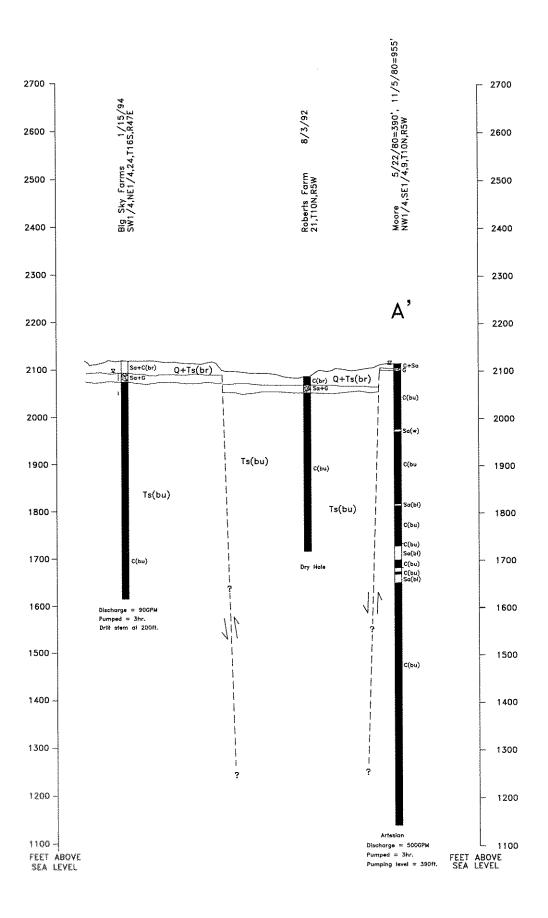
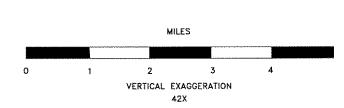
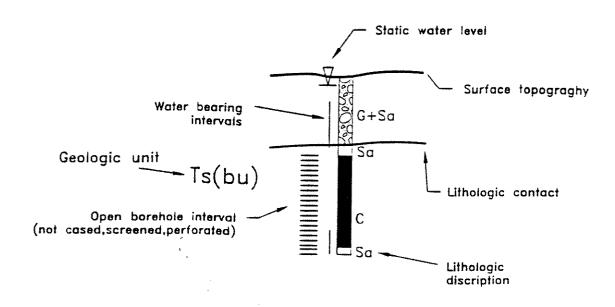


Figure 2c
Treasure Valley Hydrologic Project
Parma Geologic Cross Section
Gregg Beukelman
2/6/97



CROSS SECTION LEGEND

Diagram of Typical Well Interval



GEOLOGIC Units (After: (1) Ferns and others, (1993), (2) Othberg and Stanford (1992), (3) Brooks, McIntyre, and Walker (1976), and (4) Savage (1961).

Qa	Alluvium of Boise, Payette, and Snake Rivers (1,2,3)
Qfe	Fluviatile and eolian sediments (4)
Qsbf	Fluviatile sand, gravel, and silt (Holocene to upper Pleistocene)(1)
Qbfg	Gravel of Bonneville Flood-scoured Boise Terrace and Boise Floodplain (2)
Qwfg	Gravel of the Bonneville Flood- scoured Whitney Terrace (2)
Qas	Terrace gravels and alluvial-fan deposits (Holocene? And Pleistocene) (1)
Qcn	Caldwell-Nampa sediments (4)
Qwig	Sandy silt of the Bonneville Flood slack water (2)
Qwgs	Sandy silt of Bonneville Flood slack water (2)
Tst	Tuffaceous sedimentary rocks (3)

WELL LITHOLOGIC ABBREVIATIONS

G	Gravel
Sa(c,m,f)	Sand (coarse, medium, fine)
C	Clay

When two sediment sizes are combined (C+Sa) the first sediment is the most abundant.

Color modifiers: Brown (Br), White (W), and Blue (Bu) are included for Tertiary sediments.

WELL DRILLER'S REPORT
State law requires that this report be filed with the Director, Department of Water Resources within 30 days after the completion or abandonment of the well.

1. WELL OWNER	7.	WATE	ER LE	VEL.	· · · · · · · · · · · · · · · · · · ·		
Name Ray Moore							
2000 North 22nd Ave		Flowi	water ng?	level 0 feet below lar	nd surface, w		
AddressPasco, Washington 99301		Artes	an clos	sed-in pressure 1 p.s.i.	•		1
Owner's Permit No.		Contr	olled b	y: D Valve 10 Cap C] Plug		
		remp	er avure	68°F. Qualitygr	ood		
2. NATURE OF WORK	8.	WELL	L TEST	DATA			
☑ New well ☐ Deepened ☐ Replacement		□ Pu	mp	□ Baller □ Air □	Other		
Abandoned (describe method of abandoning)					.,		
		00			Hours Pu	mped	
3. PROPOSED USE	 				_		
□ Domestic □ Irrigation Ø Test □ Municipal	9	LITH	OI OG	IC LOG			_
☐ Industrial ☐ Stock ☐ Waste Disposal or Injection☐ Other looking for hot watestify type)	Hole		pth	1		T 444	
LI Other TOURING TOT NOT WA (specify type)	1	From		Material		Yes	No
4. METHOD DRILLED	12	<u> </u>	3	top_soil			
X Rotary Air Hydraulic Reverse rotary	12	12	12	sandy clay		 	┼┤
☐ Cable ☐ Dug ☐ Other	12	 15	27	gravel			
	-6	160	160				
5. WELL CONSTRUCTION	6	161	302	blue oless		X	\vdash
Casing schedule: 30 Steel Concrete Cother	-6	307	308	black sand blue clay		X	
Thickness Diameter From To	6	308	390	blue olay black sand		-	\vdash
Dismeter From To		770				×	
Inches Inches feet feet		 -	 			├ ─	-
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Was a packer or seal used? ☐ Yes ☒ No Perforated? ☐ Yes ☒ No		1. 857	 	a programme a second of the	-7. F	_	
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	Signature Signature	33				- 230746	18. 18. 19. 19
8. LOCATION OF WELL	. 11.			CERTIFICATION	1.00	8 . No	day.
Sketch map location must agree with written location. N		1/We	certify	that all minimum well constr	uction standar	ds w	ere
Subdivision Name	complied with at the time the rig was removed.						
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S		Signed	by (Fi	irm Official)	To Doy	<u>Z</u>	
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WELL DRILLER'S REPORT

State law requires that this report be filed with the Director, Department of Water Resources within 30 days after the completion or abandonment of the well.

1. WELL OWNER (1.3)	7.	WATI	R LEV	/EL			
Name Ray Moore	Static water level 0 feet below land surface.						
2000 N 22nd Ave. AddressPasco, Washington 99301	Flowing? D Yes No G.P.M. flow						
		Contr	olled b	ed-in pressure p.s.i y:	1 Plua		
Owner's Permit No.		Temp	erature	80 of Quality goo	d with ga	15	
2. NATURE OF WORK	8.	WELI	. TEST	DATA			
☐ New well		□ Pu	mp	□ Bailer 🔯 Air 🗆	Other	·	
				Hours Pur	nped		
				2.	2.		
3. PROPOSED USE							
☐ Domestic ☐ Irrigation 10 Test ☐ Municipal	9.	LITH	OLOGI	IC LOG			
☐ Industrial ☐ Stock ☐ Waste Disposal or Injection ☐ Other (specify type)	1	De				-	ter
	Diam.	From	To	Material In addition to R	av Moore		No
4. METHOD DRILLED	6	395	400	blue clay sand stone	as moore		
☑ Rotary ☑ Air ☐ Hydraulic ☐ Reverse rotary ☐ Cable ☐ Dug ☐ Other		$m \Lambda Z$	7170	black for the first	ing sand	x	1
	1-8	430	445 451	blue clay black sand flowi blue clay black sand heavi	ng heavi	hσ	ļ. <u>.</u>
5. WELL CONSTRUCTION	5	451	454	blue clay black sand heavi			ļ
Casing schedule: ☑ Steel ☐ Concrete ☐ Other Thickness Diameter From To	}	478	578	blue sticky clay			
Thickness Diameter From To 250 inches 6 inches + 1 feet 669 feet	1 0	579	633	hard blue shale			
258 inches 8 inches 1 feet 40 feet inches inches feet feet inches feet feet	6	633	955	blue shale hard	7.7.7.1.05		
was casing drive shoe used? 28 Yes No						<u> </u>	<u> </u>
Wat a macker or east used? IT Vac 100 at 100		<u> </u>	-			_	_
Perforated?							
Size of perforation inches by Inches							
Number From To perforations feet feet feet feet				- PECEU	71 8 15		-
I Deriorations feet to the contract of the con					想加		L
Well screen installed? ☐ Yes 전 No Manufacturer's name				DEC 1 :) 1956			-
Manufacturer's name Type Model No. Diameter Slot size Set from feet to feet				Department		ļ	-
Diameter Slot size Set from feet to feet Gravel packed? Yes XI No I Size of gravel	est strong Retional access						
Placed from				ni IS no	Cp	111	二
Surface seal depth 40 Material used in seal: 3 Cement grout D Puddling clay						1.5.	
Sealing procedure used: Slurry pit Temp. surface casing X) Overbore to seal depth					- 21 108 0 -	_	
Method of joining casing: ☐ Threaded ☐ Welded ☐ Solvent				Section 1	1 - Pater Resou		
Weld ☐ Cemented between strata						LEZ.	
Describe access port	10.	Wo	rk start	ed 10/17/80 finished	11/5/8	0	
6. LOCATION OF WELL	11.			CERTIFICATION			
Sketch map location must agree with written location. N		I/We	certify	that all minimum well constr	uction standar	ds w	ere -
Subdivision Name	complied with at the time the rig was removed.						
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WELL DRILLER'S REPORT

State law requires that this report be filed with the Director, Department of Water Resources within 30 days after the completion or abandonment of the well.

Water Right Permit No Water Right Permit No NATURE OF WORK Despared Replacement Netl dameter increase Aberidoned (describe abandonment procedures such as a materials, plug depths, etc. in lithologic log) PROPOSED USE PROPOSED USE Industrial Distock Tiest Municipal Industrial Distock Waste Disposal or Injection Other Replacement (specify type)	Olecharge G.P.M. O P. LITHOLOGIC LO	A Bailer S Air E Pumping Level 565) Other Hours Pumped 1
PROPOSED USE PROPOSED USE Direction Di	0 9. LITHOLOGIC L	565	
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STATE OF OREGON WATER WELL REPORT (as required by ORS 537.765)

KECEIAED

MAR 1 8 1994

(as required by ORS 537.765) WATE	R RESOURCES D	(START CARD) #	18568	
(1) OWNER: Well Number /8568 S	ALEMLO CRESON			
Name Big Sky Farms Tac.	County	Latitude	description:	
Address 270 E. 70 ST.		N or Range	47 E or v	W. CONTRACTOR OF THE PARTY OF T
City Wieser State Ida Zip 83672	Section 25		* NE W	" <u>(</u>
(2), TYPE OF WORK:	Tax Lot 240			
New Well Deepen Recondition Abandon			Lan Sing	Rel
(3) DRILL METHOD:	Ontar		77914	
Rotary Air Rotary Mud Cable	(10) STATIC WA		,	
Other	Z /ft.	below land surface.	Date - L	5-44
(4) PROPOSED USE:		lb, per sq	uare inch. Date	
☐ Domestic ☐ Community ☐ Industrial ☐ Irrigation ☐ Thermal ☐ Injection ☐ Other————————————————————————————————————	(II) WATER BEA	ARING ZONES:		
Thermal Injection Other Trip (5) BORE HOLE CONSTRUCTION:		つり	7 · · · ·	
Special Construction approval Yes No Depth of Completed West ft.	Depth at which water	was first found 22		
Explosives used Yes No Type Amount	From	То	Estimated Flow Rate	SWL
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9 56 50	(12) WELL LOG	h:		-
		Ground elevat	tion	
How was seal placed: Method ☐ A ☐ B ☐ C ☐ D ☐ E	[
Backfill placed from ft. to ft. Material		Material	From To	SWL >/
Gravel placed from ft. to ft. Size of gravel	Sanay	Clay U	15 27 42	
(6) CASING/LINER:	RIVER	Carge Nool	U2 /U	2/
Diameter From To Gauge Steel Plastic Welded Threaded	Fractor	-d War Ch	15tag (4 /-7	
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	Siltston	Similar	<u> </u>	
	CON 5151	ent torna	tion	
Liner: Yes			·	4
Liner: No				4
Final location of shoe(s)				+
(7) PERFORATIONS/SCREENS: \(\cappa\)				+
Perforations Method				
Screens Type Material				<u> </u>
Slot Tele/pipe				
From To size Number Diameter size Casing Liner				
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(8) WELL TESTS: Minimum testing time is 1 hour				+
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Pump Bailer Air Artesian	(unbonded) Water W	ell Constructor Certific		
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	ment of this well is in a	compliance with Oregon's	well construction standards o my best knowledge and	. Materials
90 200 1 hr.	and the information	reported above are rue in	-	
	T.	L. Miller	WWC Number	60 L.
	Signed 5	- want	Date /	<u> </u>
Temperature of Water Depth Artesian Flow Found	(bonded) Water Well	Constructor Certificati	on:	
Was a water analysis done Yes By whom	formed on this well due	my for the construction,	alteration, or abandonment s reported above. All work	work per-
Did any strata contain water not suitable for intended use: Too little	during this time is in co	impliance with Oregon we	ell construction standards.	This report
Salty Muddy Odor Colored Other	is true to the best of r	ny knowledge and belief.	. WWC Number,	789
Depth of strata:	Signed Jacob	- Sulle	Date 1-2	5-99

HEGETVED

STATE OF OREGON NOV 21 1996 5039 7
WATER SUPPLY WELL REPORT

WATER SUPPLY WELL REPORT (as required by ORS 537.765) WATER RESOURCES DEPT.	.D.# (START CARD)# 94824
Instructions for completing this repos Are EMh OREGON this form.	(SIARI CARD)# 14084
1) OWNER: Well Number LO6850	
Name Max Mills	County Malkeul Latitude Longitude
Address 114 SW 3 Ave	Township 1 5 X or S Range U E E or WM.
City Ontario State OK Zip 97918	Section 6 SE 1/4 NW 1/4
(2) TYPE OF WORK	Tax Lot 510 de Block Subdivision
New Well Deepening Alteration (repair/recondition) Abandonment	Street Address of Well (or nearest address)
(3) DRILL METHOD:	
Rotary Air Rotary Mud Cable Auger	(10) STATIC WATER LEVEL:
Other (4) PROPOSED USE:	147 ft. below land surface. Date 10-17-96
	Artesian pressure lb. per square inch. Date
Domestic Community Industrial Irrigation Thermal Injection Livestock Other	(11) WATER BEARING ZONES:
Thermal Injection Livestock Other (5) BORE HOLE CONSTRUCTION:	7 . 100/4
Special Construction approval Yes No Depth of Completed Well 520ft	Depth at which water was first found 150 ff
Explosives used Yes No Type Amount	
HOLE SEAL	From To Estimated Flow Rate SWL
Diameter From To Material From To Sack or pounds	15877 /82 /-36PM (47)
12 0 mg coment in 18	101
0 83 900 10 83 36	
8 +1 520 Bully 10 7	
	(A) SERVE FOO
How was seal placed: Method A B C D E	(12) WELL LOG: Ground Elevation
De Other Bestonto was dry strong souther	Giodilo Dievation
Backfill placed from ft. to ft. Material	Material O From To SWL
Gravel placed from ft. to ft. Size of gravel	Sandy Soil 08
(6) CASING/LINER:	Hardylan 1 9812
Diameter From To Gauge Steel Plastic Welded Threaded	Sandy Kin Closy 12 49
asing: 9 +1 84 250 0 0	grave 49 79
	En oldy 18 150
	By Sanot Clay 150 182 147
	Hard Bricky 182 189
Liner:	13hie class 189 385
	Huy Blue clay 385 387
Final location of shoe(s) 84 17	Blue clay, 397475
(7) PERFORATIONS/SCREENS:	ney Sandy Clay 475 505 147
Perforations Method	grey clay 505 520 147
Screens Type Material Stot Tele/pipe	
From To size Number Diameter size Casing Liner	
(8) WELLTESTS: Minimum testing time is 1 hour	Date started 9-23-96 Completed 11-18-96
Flowing	(unbonded) Water Well Constructor Certification:
Pump Nailer Air Artesian	I certify that the work I performed on the construction, alteration, or abandonment
Yield gal/min Drawdown Drill stem at Time	of this well is in compliance with Oregon water supply well construction standards. Materials used and information reported above are true to the best of my knowledge
9-10 253 H 1hr.	and belief.
340	WWC Number
	Signed Date
Temperature of water 630 Depth Artesian Flow Found	(bonded) Water Well Constructor Certification:
Was a water analysis done? Yes By whom	I accept responsibility for the construction, alteration, or abandonment work
Did any strata contain water not suitable for intended use? Too little	performed on this well during the construction dates reported above. All work performed during this time is in compliance with Oregon water supply well
Salty Muddy Odor Colored Other	construction standards. This report is true to the best of my knowledge and belief.
nth of strata:	11100

STATE OF IDAHO DEPARTMENT OF WATER RESOURCES

USE TYPEWRITER OR BALLPOINT PEN

42

WELL DRILLER'S REPORT

State law requires that this report be filed with the Director, Department of Water Resources within 30 days after the completion or abandonment of the well.

			*******	o. 010 11411.				
1. WELL OWNER	7.	WATE	RLEV	EL				٦
Name Angray Frie Foods				~~~				ı
Name American trie tearly Address 25 North 674 St ailittle	lde	Static Flowin	water is no?	Yes 🗆 No	feet below far G.P.M. flo	nd surface.		1
Drilling Permit No. 45-91-60-014								-
		Contro	olled by	Valve	Cap] Plug		١
Water Right Permit No.		lempe	erature. Desc	nbe artesian or	Quality Tell	3655y		-
2. NATURE OF WORK	8.		TEST			······································		7
Z New well □ Deepened □ Replacement	-		mp	☐ Bailer	PA Air L	. 		۱
☐ Well diameter increase			·			Other		
 Abandoned (describe abandonment procedures such as materials, plug depths, etc. in lithologic log) 			G,P,M.		umping Level	Hours Pun	ped	
		300			70	 		
3. PROPOSED USE TEST WELL # 7	1							\Box
	<u> </u>					<u> </u>		
☐ Domestic ☐ Irrigation 🖨 Test ☐ Municipal ☐ Industrial ☐ Stock ☐ Weste Disposal or Injection	9.	LITH	OLOGI	C LOG				
C] Other(specify type)	Bore	-			Material		Wat	
	Diam.	From	TO 2007/	7	r Soc		Yes	삇
4. METHOD DRILLED	12	11	10		Slowe	·		十
Ø Rotary □ Air □ Hydraulic □ Reverse rotary	Z	16	R	Z/oc				4
□ Cable □ Dug □ Other		2	**	Hug	Say	ne è Sant	2	4
		7.20	7.	300/0	SCATTER	ar i syna	9	
5. WELL CONSTRUCTION		ļ						
Casing schedule: Steel G Concrete G Other	<u> </u>	 -						
Thickness Diameter From To								
inches inches feet feet		 						
inches feet feet	t	┼──	 					
inches inches feet feet	٠							
Was casing drive shoe used? Ø Yes □ No Was a packer or seal used? □ Yes ❷ No		ļ						
Perforated? Yes B No	-	┼─	 -				-	-
How perforated? ☐ Factory ☐ Knife ☐ Torch ☐ Gun		1		 			╁	-
Size of perforation inches by inches To								
perforations feet fee	,	╂	 	TEXT	ATT THE	- 673	 	
perforations feet fee				18/17	PRI A	(4,11);	 -	
perforationsfeetfee Well screen installed? □ Yes □ No	٠	<u> </u>		III.	1	A_{ij}		
Manufacturer's name		 	 		00T 2 5 19 9	1	┼	-
Type Model No, Diameter Slot size Set from feet to fee	: 🗀				ment of Water B		 	\vdash
Diameter Slot size Set from feet to fee	,	 	_	Depart W	ment or many	1111		
Gravel packed? Yes No Size of gravel	. h	╁──	-	ļ			╫	┼╌
Placed from feet to fee Surface segl depth Material used in seal: Cement grou		I	- Trans	****	2/8/ 27/21			
Bentonite Puddling clay	╁—	 	 	المسريانية	الليتي الماد	<u> </u>	_	1
Sealing procedure used: Slurry pit Temp-surface casing	.E		山水			}	┼──	\vdash
☐ Overbore to seal dept Method of joining casing: ☐ Threaded ☐ Welded ☐ Solvent	^		T.C.	_DECO	4 1991			
Weld	-	 -	┼	ļ	Catar Resource		┼	
Cemented between strata	10	_ '	Ųi	partna il	1 316 PERIOR	·	<u> </u>	1
Describe access port / Nog	۱۰ '	,. W	ork star	ned F Av	$\sqrt{2-9/}$ finish			ai .
	+							
6. LOCATION OF WELL	11	i. DRI	LLERS	CERTIFICA	TION OL	が対立を持つ		
Sketch map location must agree with written location.		I/W	certif	y that all mis	nimum well con	struction stand	rds v	/ere
Subdivision Name					the rig was rem			
		Firm	Name	Frank.	Shellan	Firm No3	26	-
W + 33 + E	-			01619	.//	D-4-		
Lot No Block No	.	Addi	Section			Uate // //		
		Sign	by (Firm Officiel	Fred	Skelle		-
County Suutte				and		111		_
SE /NO & Sec 33 T 9 NM 5 ED				(Operator)	Justo	wulk!	-	
I WEST TI SEED TO WEST				-				

WATER WELL REPORT STATE OF OREGON

RECEIVED

MAY 3 0 1985

WATER RESOURCES DEPT SALEM, OREGON

149 gh

State Well No. 185/47E-746

State Permit No.

I) OWNER:	(10) LOCATION OF WELL:					
Name ONTARIO GOLF COURSE	County MALHEUR Driller's well number					
Address P. O. BOX 24	NW 4 NW 48-4- 7 - 10 C - 177					
City ONTARIO State OREGON	Tax Lot # Lot Blk Subdivision					
(2) TYPE OF WORK (check):	Address at well location:					
77.77						
New Well AX Deepening □ Reconditioning □ Abandon □ If abandonment, describe material and procedure in Item 12.	(11) WATER LEVEL: Completed well.					
	•					
(3) TYPE OF WELL: (4) PROPOSED USE (check):	Depth at which water was first found 35 ft. Static level 18 ft. help be a few first found 18 ft.					
Rotary Air XX Driven	At .: Delow iand surface. Date					
Rotary Mud Dug Irrigation XX Test Well Other Company	nas per square men, pate					
(5) CASING INSTALLED: Steel XX Plastic	Depth drilled 220 ft. Depth of completed well 220 ft.					
Threaded Wolded 77 77	Formation: Describe color, texture grain size and structure of					
5. Diam from 6. ft to	manufaction of the latest the latest stratest and admitted non-tented and the latest and the lat					
"Diam from	for each change of formation. Report each change in position of Static Water Level and indicate principal water-bearing strata.					
LINER INSTALLED:	MATERIAL					
"Diam from ft. to ft. Gauge	TOPOLIST OF AVE					
(A) DITIONS ASSESSED						
(6) PERFORATIONS: Perforated? XXes \(\text{No} \) Type of perforator used TORCH	SAND CDAVET					
3/16	1 DI 315 07 4 1 10 10					
2 / 115	77.100					
1.50 perforations from	DITTER OF ACT					
perforations from	DI AGE GLOS LA LIV					
perforations from	BLACK SAND 116 117 18					
7) SCREENS: Well screen installed? Yes XXo	BLUE CLAY 117 220					
Manufacturer's Name						
peModel No.						
m. Slot Size Set from ft. to ft.						
Diam. Slot Size Set from ft. to ft.						
(8) WELL TESTS: Drawdown is amount water level is lowered below static level						
es a pump test made? NXes ONo II yes, by whom?DALLAS DRILL	ING					
110g.p.m. gal/min with ft. drawdown after hrs.						
(PUMP TEST)						
Air test 100+ gal/min. with drill stem at ft. hrs.						
Bailer test gal/min with ft. drawdown after hrs.						
esian flow g.p.m.						
erature of water 58 Depth artesian flow encounteredft.						
0\ 0031011111111111111111111111111111111	Work started 5/15 19 85 Completed 5/17 19 85					
CENTERIOR YES TAND	Date well drilling machine moved off of well 5/17/85 19					
***************************************	Drilling Machine Operator's Certification:					
The state of the s	This well was constructed under my direct supervision. Materials used					
Example of well bore to bottom of seal 14. in.	and information reported above are true to my best knowledge and belief.					
nameter of well bore below seal	[Signed]					
Sumber of sacks of cement used in well seal 12 + 5% bentonite sacks	(Straine Operator)					
iow was cement grout placed? pumped through 1"	Drilling Machine Operator's License No.					
grout pipe	Water Well Contractor's Certification:					
The state of the s	This well was drilled under my jurisdiction and this report is to the					
vas pump installed?	are best of my knowledge and belief.					
Vas a drive shoe used? ☐ Yes ☐ No · Plugs Size: location ft	Name DALLAS DRILLING & PUMP CO TNO					
nd any strata contain unusable water? 🗌 Yes 🔲 No	1 5(15 Som TRFR" St (Type or print)					
vpe of Water? depth of strata	Address PAYETTE, IDAHO. 83661					
ferhod of sealing strata off	[Signed]					
as well gravel packed? Yes No Size of gravel:	(Water W. Contractor)					
	I Postwood Palance NV (An a					
ravel placed from X 5 ft. to 40 ft.	Contractor's License No682Date					

NOTICE TO WATER WELL CONTRACTOR
The original and first copy of this report
are to be filed with the

WATER RESOURCES DEPARTMENT, SALEM, OREGON 97310 within 30 days from the date of well completion.

SP*12658-690

STATE OF OREGON

******NOTICE*****

WATER WELL REPORT (as required by ORS 537.765)

PLEASE BE ADVISED THIS REPORT IS BEING FILED TO AMEND A PREVIOUSLY FILED WELL BEENSE TYPE OF PRINT IN INK FILED WITH THE STATE OF OREGON 5/17/85 SAME OWNER, SAME LEGAL DESCRIPTION, SAME DRILLING COMPANYOFFICIAL USE ONLY)

1) OWNER:	(10) LOCATION OF WELL by legal description:
Name ONTARIO GOLF COURSE - (I. WESTCOTT)	County MAI HEUP NW W NW W of Section 7 of
Address P. O. BOX 24 -	Township 18 South, Range 77 Foot, WM. (Township is North or South) (Range is East or West)
City ONTARTO, OREGON 97914 State	Tax Lot Lot Block Subdivision
2) TYPE OF WORK (check):	MAILING ADDRESS OF WELL (or nearest address)
New WellXX Deepening Reconditioning Abandon	
f abandonment, describe material and procedure in Item 12.	
(3) TYPE OF WELL: (4) PROPOSED USE (check):	(11) WATER LEVEL of COMPLETED WELL:
Rotary Air XX Driven Domestic Industrial Municipal	Depth at which water was first found ft.
Thermat	Static level ft. below land surface. Date
Other:	Artesian pressure Ibs. per square inch. Date
Bored Piezometric Grounding Test	(12) WELL LOG: Diameter of well below casing
CASING INSTALLED: Steel XX Plastic	(12) WELL LUG: Diameter of well below casing
Threeded Welder MV	Formation: Describe color, texture, grain size and structure of materials; and show thickness
	and nature of each stratum and aquifer penetrated, with at least one entry for each change of formation. Report each change in position of Static Water Level and indicate principal
Diam. from ft. to Gauge	water-bearing strata.
LINER INSTALLED: Steel Plestic	MATERIAL From To SWL
Threaded Welded	MATERIAL POLICE
Diam. from ft. to ft. Gauge	** THIS FILING IS ANAMENDED WELL REPORT.
6) PERFORATIONS: Perforated? Yes No	THE AMENDMENT IS TO SECTION #5. PLEASE
ize of perforations in. by in.	MOPTOR THE CASTNO INSTALLED WAS FROM DEF
perforations from ft. to ft.	TO FORE DIELATE ANTEND DETECTION OF THE
SEE PREVIOUS REPORT perforations from ft. to ft.	REPORT WHICH READ 10ft
perforations from ft. to ft.	ALL OTHER INFORMATION IS THE SAME AS PREVIOU
7) SCREENS: Well screen installed?	FILED.
Aanufacturer's Name	
peModel No.	
TEPREVIOUS REPORTE Set from	
Diam	
8) WELL TESTS: Drawdown is amount water level is lowered below static level	RECEIVED
(8) WELL IESIS: below static level	
Vas a pump test made? □ Yes □ No If yes, by whom?	JAN 2 3 1986
d gal./min. with ft. drawdown after hrs.	WATER RESOURCES DEPT
<u> </u>	SALEM, OREGON
tir test gal./min. with drill stem at ft. hrs.	:
lailer test gal./min. with ft. drawdown after hrs.	
Artesian flow g.p.m.	
perature of water Depth artesian flow encountered	
9) CONSTRUCTION: Special standards: Yes 🗆 No 🗀	Date work started/completed
Yell seal—Material used	
Well sealed from land surface to ft	
Diameter of well bore to bottom of seal in.	This well was constructed under my direct supervision. Materials used and information reported above are true to my best knowledge and belief.
tiameter of well bore below sealin.	
mount of sealing material sacks D pounds D	[Signed], 19
low was cement grout placed?	1 (DUMUCU) WATER WELL COUNTRICTOR CERTIFICATION:
	Bond 2354454 Issued by: WESTERN SURETY
eren en e	(Surety Company Name)
Vas pump installed? Type	On behalf of JOIANNY Transactor Water Well Constructor)
Was a drive shoe used? Yes No Plugs Size: location ft.	DALLAS DRILLING & PUMP CO. This well was drilled under my jurisdiction and this report is true to the
Did any strata contain unusable water? Yes No	This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief:
Type of Water? depth of strata	Desir or my knowledge-sind delier:
Method of sealing strata off	(Signed)
Vas well gravel packed? ☐ Yes ☐ No Size of gravel:	(Dated)
A A	(L'avv)

NOTICE TO WATER WELL CONSTRUCTOR
The original and first copy of this report
are to be filed with the

WATER RESOURCES DEPARTMENT, SALEM, OREGON 97310 within 30 days from the date of well completion.

SP*46866-690

RECELVEDAT

STATE BEROLOGION

PORT ****NOTICE****

1500 Mallo Well Notate Well No.

189/47E-7H

WATER RESOURCES DEPT SALEM, OREGON PLEASE BE ADVISED, THIS REPORT PERTAINS TO THE DEEPENING OF AN EXISTING WELL, REPORT PREVIOUSLY FILED. SAME OWNER. SAME LEGAL. DATE WORK PREV.

(1) OWNER: COMPLETED - 5/17.	(10) LOCATION OF WELL:
Name ONTARIO GOLF COURSE -(L. WESTO	OPT) MALHEIR
Address P. O. BOX 24	Driller's well number
City ONTARIO, OREGON 979 butte	NW & NW & Section 7 T.18S R 47E W.M.
	Tax Lot # Lot Blk Subdivision Address at well location:
(2) TYPE OF WORK (check): New Well D Deepening DY Reconditioning D Ahandon D	Authors at well (Oction)
New Well ☐ Deepening XX Reconditioning ☐ Abandon ☐ If abandonment, describe material and procedure in Item 12.	(11) WATER LEVEL: Completed well.
(3) TYPE OF WELL: (4) PROPOSED USE (check):	Depth at which water was first found EXISTING INFO. ft.
	Static level ft. below land surface. Date
Rotary Air XX Driven	Artesian pressure lbs. per square inch. Date
☐ Bored ☐ Thermal: Withdrawal ☐ Reinjection ☐	(12) WELL LOG: Diameter of well below casing
(5) CASING INSTALLED: Steel Plastic	Depth drilled EXISTING INFO Openth of completed well ft.
EXISTING INFFloreaded [] Welded []	Formation: Describe color, texture, grain size and structure of materials; and show
ft. to	thickness and nature of each stratum and aquifer penetrated, with at least one entry for each change of formation. Report each change in position of Static Water Level
"Diam fromft. toft. Gauge	and indicate principal water-bearing strata.
LINER INSTALLED:	MATERIAL From To SWL
ft. toft. Gauge	DEEPENING INFO
(6) PERFORATIONS: Perforated? Von No	
Type of perforator used EXISTING INFO.	SHALE GREY 220 335
Size of perforations in. by in.	SAND FINE BLACK 335 336 18'
perforations fromft. toft.	
perforations from	
perforations from	CITATE CORE
(7) SCREENS: Well screen installed? Yes No	
Manufacturer's Name EXISTING INFO.	
Type Model No.	
Diam. Slot Size Set from ft. to ft.	
Diam. Slot Size Set from ft. to ft.	
(8) WELL TECTO. Drawdown is amount water level is lowered	
below static level	
es a pump test made? Yes No If yes, by whom?	
eld: gal/min with ft. drawdown after hrs.	1
Atward	
Air test gal/min with drill stem at ft. hrs. Bailer test gal/min with ft. drawdown after ham	
Service Single	
	work started 19 Completed 19
(9) CONSTRUCTION: Special standards: Yes : No : EXISTING INFO.	Date well drilling machine moved off of well 6/10/85 19
	Drilling Machine Operator's Certification:
Well sealed from land surface to	This well was constructed under my direct supervision. Materials used
Diameter of well bore to bottom of sealin.	and information reported above are true to my best knowledge and belief
Diameter of well bore below sealin	[Signed] Date Date
Number of sacks of cement used in well seal	Duilling Marking Country of
low was cement grout placed?	
The state of the s	Water Well Contractor's Certification:
Was pump installed?	
TT 1.7 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	
Nas a drive shoe used?	50 5 eraph, firm of comportation + (Type or print)
ype of Water? depth of strata	Address PAYETTE IDAHO 83661
Method of sealing strata off	[Signed]
Vas well gravel packed? ☐ Yes ☐ No Size of gravel:	(Water Well Contractor)
havel placed fromft. toft.	Contractor's License No. 582 7/11/85
NOTICE TO WATER WELL CONTRACTOR	WATER TROOP TO THE TANK THE THE TANK TH
- TOTAL TOMAN ODITING OUT	WALLER RESOURCES DEPARTMENT. SD#19659.600

NOTICE TO WATER WELL CONTRACTOR The original and first copy of this report are to be filed with the

WATER RESOURCES DEPARTMENT, BALEM, OREGON 97310 within 30 days from the date of well completion.

SP*12658-690

RECEIVED

WATER WELL REPORT MAY 2 3 1986

(as required by ORS 537 765) TERM RESOURCES BEFOR TYPE or PRINT IN INK

(for official use only)

(1) OWNER:	(10) LOCATION OF WELL by legal descri	ption:
ame MALHEUR EXPERIMENTAL STATION	County MALHEUR SW W W of Section 3	30 0
Address RT. 1 BOX 620	Township TO SOULII Range 4/ East	WM.
City ONTARIO OREGON 97911,State	(Township is North or South) (Range is East	or West)
(2) TYPE OF WORK (check):	Tax LotLotSubdivision MAILING ADDRESS OF WELL (or nearest address)	
New Well	SAME AS OWNER ADDRESS	. *-
If abandonment, describe material and procedure in Item 12.	CAPTE NO OWNER PROMESO	-1
(3) TYPE OF WELL: (4) PROPOSED USE (check):	(11) WATER LEVEL of COMPLETED WE	.T.15
Rotary Air XX Driven Domestic XX Industrial D Municipal D	Depth at which water was first found 67	n. "
Thermal:	Static level 29 ft. below land surface	1:
Other: AA	Artesian pressure lbs. per square inch	
Bored Piezometric Grounding Test	·	6"
(5) CASING INSTALLED: Steel IX Plastic	(12) WELL LOG: Diameter of well below casing the Depth drilled Diameter of the Depth of completed	
Threaded Welded Cyv	Formation: Describe color, texture, grain size and structure of materials:	and show thickness
A Cauge	and nature of each stratum and aquifer penetrated, with at least one ent formation. Report each change in position of Static Water Level an	ry for each change of
Diam. fromft. toft. Gauge	water-bearing strata.	a maicate principai
LINER INSTALLED: Steel Threaded Welded	MATERIAL From	
	SANDY CLAY O	To SWL 15
*Diam. from	DRY CEMENTED GRAVEL 15	40
(6) PERFORATIONS: Perforated? ☐ Yes ☐ No	BROWN CLAY 40	67
Size of perforations in. by in.	SAND, SILT, GRAVEL 67	73 30
perforations fromft. toft.	SILT STONE 73	112
perforations from	BLUE CLAY 112	130
perforations from	HARD BLUE SHALE 130	136
(7) SCREENS: Well screen installed? ☐ Yes X No	BLACK AND GREY SANDSTONE 136	137 30
Manufacturer's Name	BLUE SHALE 137	140
Type	GREY SANDSTONE 140	141 30
Slot Size Set from ft. to ft.	BLUE SHALE 141	148
iam Slot Size Set from ft. to ft.	GREY SANDSTONE 148	150 30
(8) WELL TESTS: Drawdown is amount water level is lowered	BLUE SHALE 150	175
OCIUW BIGLIC IÇYGI	GREY SANDSTONE 175	177 30
Was a pump test made? Dives No If yes, by whom? DALLAS DRILLING	GREY CLAY 177	220
gar, inm. with > 112 thawhown sites ~ 1178.		
Air test 45 gal/min. with drill stem at 220 ft. 2 hrs.	79	<u> </u>
garyanti. with that seein at 11. 12.		· · · · · · · · · · · · · · · · · · ·
Bailer test gal./min. with ft. drawdown after hrs. Artesian flow g.p.m.		
perature of water Depth artesian flow encounteredft.		
·	Date work started 3/8/86 /completed 3/	13/85 .
(9) CONSTRUCTION: Special standards: Yes \(\sigma\) No \(\mathbb{R}\) Well seal—Material used	Date well drilling machine moved off of well 3/13/86	÷ 19
4 D	(unbonded) Water Well Constructor Certification (if a	
10/15	This well was constructed under my direct supervision. N	(ppricable): Natoriels used and
Diameter of well bore to bottom of sealin. Diameter of well bore below sealin.	information reported above are true to my best knowledge an	d belief.
Amount of sealing material 35 ± bentonite sacks X pounds U	[Signed]Date	10
How was cement grout placed? PIMPED THROUGH 126	[Digital] management DRV	
of 1" CROUT PIPE TO LAND SURFACE	(bonded) Water Well Constructor Certification:	
The state of the s	Bond 2354,54 Issued by: WESTERN SII	RIY
Was pump installed? YES Type SIB HP 1½ Depth 109 ft.	On behalf of JOHNNY GOFF (Surety Company	AMENTO)
Was a drive shoe used? XXYes \(\sigma\) No \(\text{Plugs}\) Plugs \(\text{Size: location}\) ft.	(type or print name of Water Well Cons	structor)
Did any strata contain unusable water? Yes No	This well was drilled under my jurisdiction and this rep	ort is true to the
Type of Water? depth of strata	best of my knowledge and belief:	
Method of sealing strata off	(Signed) John J. Low	
Was well gravel packed? Yes WNo Size of gravel:	(Water Well Constructor)	***************************************
Gravel placed from ft. to ft.	(Dated)	

NOTICE TO WATER WELL CONSTRUCTOR The original and first copy of this report are to be filed with the

WATER RESOURCES DEPARTMENT, SALEM, OREGON 97310 within 30 days from the date of well completion.

SP*46866-690

The original and first conv of this report are to be flied with the WATER WELL REPORT! STATE ENGINEER, SALEM, ORKEN AND ENGINEESPATE OF OREGON within 30 days from the data within 30 days from the days State Well No. CALEY, GLIGGH State Permit No. . OWNER: (11) WELL TESTS: Drawdown is amount water level is lowered below static level Idaho CANNINA COMPANY Name No If yes, by whom? Was a pump test made? 🔲 Yes Address Yield: gal./min. with ft. drawdown after (2) LOCATION OF WELL: Bailer test 200 gal./min. with County MAIhuer Driller's well number 117 Artesian flow * Section 28 T. 19W R. 5W Temperature of water 60 Was a chemical analysis made? ☐ Yes (4-170 Bearing and distance from section or subdivision corner (12) WELL LOG: TOWN Lot At Idaho CANNING CO. Diameter of well below casing ___ NYSSA-ORZGON Depth drilled 562 ft. Depth of completed well Formation: Describe by color, character, size of material and structure, and show thickness of aquifiers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of formation. MATERIAL (3) TYPE OF WORK (check): Soil Top Well Deepening Reconditioning [SAND FINE SILTY ndonment, describe maferial and procedure in Item 12. SAND MAD- to GARSZ (WATER З٥ 15 (4) PROPOSED USE (check): (5) TYPE OF WELL: GRAVAL FINETO MILL (WODE) 40 30 Clay Blue Rotary Driven 🔲 40 253 Domestic [Industrial [Municipal [Cable Jetted 📋 \Box Clay Blue STREAKE BROWN SOM 255 275 Irrigation Test Well Other Dug П Bored [C/174 B/42 (6) CASING INSTALLED: Threaded [] Welded [] "Diam. from Mov ft. to _ ft. to ____ PERFORATIONS: Perforated? [] Yes [] No with Bentonite Fram your e of perforator used bottom to 401, Wood plug set at Size of perforations in the Line in by perfirations from _____ ft. to AND hole Filled with Bentanite perfirations from _____ft. to perferations from ______ft. to ____ To SURFACE perforations from _____ It. to perfyrations from (8) SCREENS: Well screen installed? ☐ Yes ☐ No Vone Manufacturer's Name ... Model No. . Set from ____ 19 64 1964 Completed Diam. Slot size Set from ... Date well drilling machine moved off of well (9) CONSTRUCTION: (13) PUMP: Well seal-Material used in seal BENTONITE (See NOTE) Manufacturer's Name ... Depth of seal 0 _____ ft. Was a packer used? ______ H.P. Diameter of well bore to bottom of seal _97% in. Water Well Contractor's Certification: Were any loose strata cemented off? Wes No Depth Was a drive shoe used? Tyes I No This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief. Was well gravel packed? [Yes [No Size of gravel: NAME Ofto Elsworth Gravel placed from :-- ft. to ___ Did any strata contain unusuable water? Yes No t (Type or print) Address P.O. BOX 471 Island City, ORegan Type of water? HARd depth of strata 15 - 40 Method of sealing strata off Bentonic Drilling Machine Operator's License No. 282 (10) WATER LÈVELS: ft. below land surface Date 6/3/6 4 Contractor's License No. 398 Date July 5 1 lbs. per square inch Date (USE ADDITIONAL SHEETS IF NECESSARY)

NOTICE TO WATER WELL CONT

STATE OF OREGON

WATER WELL REPORT

RECEIVED

AUG 26 1996

66463

(START CARD) #_
Instructions for completing this report are on the last page of this form, WATER RESOURCES DEPT. SALEM, OREGON (9) LOCATION OF WELL by legal description: (1) OWNER: Vell Number Latitude Longitude Dr W. WM. N or Range Zip 9 79/-1/4 Subdivision (2) TYPE OF WORK Block New Well Deepening Alteration (repair/recondition) Abandonment Street Address of Well (or nearest address) (3) DRILL METHOD: (10) STATIC WATER LEVEL: Kotary Air Rotary Mud Cable Auger 84 Other ft. below land surface. (4) PROPOSED USE: Artesian pressure lb. per square inch. (11) WATER BEARING ZONES: Domestic Irrigation Community Industrial Other Thermal Injection Livestock (5) BORE HOLE CONSTRUCTION Depth at which water was first found Special Construction approval Yes No Depth of Completed Well 390 ft. Explosives used Yes No Type From Estimated Flow Rate SWL Amount 35 HOLE SEAL 25 Bentonte 700 (12) WELL LOG: How was seal placed: Method \square A Ground Elevation Other . Material From SWL Backfill placed from ft. to Material To Tree Size of gravel 7 Gravel placed from ft. to ft. (6) CASING/LINER: 1.35 To Gauge Steel Welded 40 .252 35 145 390 Liner Final location of shoe(s) (7) PERFORATIONS/SCREENS: Perforations Method Material Screens Type Tele/pipe Diam (8) WELL TESTS: Minimum testing time is 1 hour Completed (unbonded) Water Well Constructor Certification: Flowing Artesian I certify that the work I performed on the construction, alteration, or abandonment Bailer Pump of this well is in compliance with Oregon water supply well construction standards. Drill stem at Time Yield gal/min Drawdows Materials used and information reported above are true to the best of my knowledge AVVI hr. and belief. -10 WWC Number Temperature of water 64" Depth Artesian Flow Found (bonded) Water Well Constructor Certification: I accept responsibility for the construction, alteration, or abandonment work Yes By whom Was a water analysis done? performed on this well during the construction dates reported above. All work performed during this time is in compliance with Oregon water supply well Did any strata contain water not suitable for intended use? Salty Muddy Odor Colored Other construction standards. This report is true to the best of my knowledge and be WWC Number (0) Depth of strata: Signed

AUG 2 6 1996

111/1	_
6646	2

STATE OF OREGON WATER WELL REPORT (as required by ORS 537.765) Instructions for completing this report are on the last page of this form. WATER RESOURCES DEPT.

1) OWN	ER:		4	1.7	<i>y</i>	ell Num	ber	35 LOCATION O				
Name	720	and	0 0	va	s de				Latitude_		ongitude	
Address A	<u> </u>	BO	Υ :	<u>236</u>	6			Township		tange <u> </u>	@r v	V. WM.
City 💙	up	200		Sta	te 07	<u>~</u>	Zip 9 79/3	Section 25	<u>' su</u>	_ 1/4 <u>_ S-W</u>	1/4	
2) TYPE								Tax Lot	_Lot B	lock	Subdivision_	
				teration	(repair/r	econditio	on) Abandonment	Street Address of	Well (or nearest add	ress) <u>3/25</u>	Shoc	uh,
3) DRIL								* ****	***************************************			- 0
Kotary /	Air [Rotar	ry Mud	Cab	ole	Auge	ar .	(10) STATIC WAT				14.00
Other _									below land surface.		Date	8-76
4) PROF								Artesian pressure		er square inch.	Date	
Domest	_		munity	Ind			rigation	(11) WATER BEA	RUNG ZONES:			
Therma		Injec		Liv		∐C)ther		، بر سم	, > -		
(5) BOR				_	-			Depth at which water	was first found	_/		
							npleted Well 390 ft	1 1		- I		T and
-	_	Yes	No			AI	nount	From /25	J C C	Estima -/C	ted Flow Rate	SW
	OLE	_			SEAL	_		11-133	773	-/-	2	87
Diameter		76 7 (-)		terial	From	To	Sacks or pounds 700					
10	0	25	Bens	Thus	10	25	/ - /					
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					+	$\vdash \dashv$				<u> </u>		<u> </u>
Uar	nen' ='		Mach	, _	<u> </u>	ı	C D DE	(12) WELL LOG				
How was s		eu: R	Metho	d □,	n	B Ł		Gn	ound Elevation			****
Othe Backfill pl		<u></u>	£. 1		ft.	Materi	ial	Ma	terial	Fron	To	SWL
Gravel pla			11. 1 ft. 1	***	- ft.		f gravel	Coment	ed Ero		7	
(6) CAS				~ <u></u>		J.120 V.	- D-w. v.	1 - 7.00.2	~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ 	U		
	lameter	From		Gauge	Steel	Plastic	: Welded Threaded	Brain.	Lets. O	en 7	1.35	
	ı		141			· 🗆			7	8		
Casing:		†			17			Blue	C'et	/35	- 145	84
*******		1			1 1							
					1 🗔	ᆸ		Blue	lan	145	390	
Liner:					77	H			0			
		1			1百	Ī						
Final locat	tion of s	hoe(s)		140								
(7) PERI			SCRE	ENS:								
Perf	forations	: 1	Method									
Scre	cens		Туре				terial					
From .	To	Slot		ber Dia	ımeter	Tele/pi		.	www.			
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				**********				· L				
(8) WEL	L TES	TS: M	Linimu	n testin	g time	is 1 ho	ur	Date started /	76-96	Completed	7-18	-96
						_	Flowing	(unbonded) Water \	Vell Constructor C	ertification:		
Pun	np		Bailer	[A		Artesian		ork I performed on			
Yield g	al/min	Dτ	awdown		Drill ste		Time	of this well is in com Materials used and in	puance with Oregor formation reported	i water supply well above are true to th	construction s te best of my k	nowledge
-10			··		39	0	alv1hr.	and belief.				
								.]		WWC I	Yumber	
			<u>:</u>					Signed			Date	
Temperatu	ure of wa	ner L	14.	Dept	h Artesi	an Flow	Found	(bonded) Water We	Constructor Cert	ification:		
Was a wat	ter analy	sis done	e? [Yes E	y whon	n			ility for the construc			
Did any st	rata con	tain wat	ter not si	itable fo	r intend	ed use?	Too little	performed on this we performed during this	time is in complian	ace with Oregon w	ater supply we	11
Salty	Mud	dy [Odor	Colo	red [Other		construction standard	s. This report is tru	e to the best of my	knowledge en	d belief.
Depth of s	strata:		·					XI ~	2 1/	WWC	Number 🙋	2-2
								Signed	L. H		Date	

STATE OF OREGON

WATER WELL REPORT (as required by ORS 537.765) MALH 2735

APR 29 1992

20s/46E/24cc

(1) OWNER; Name Alan'Peterson	wen w	THROSE CANADA STATES	(9) LQCATIO	NOE WELLING	regar nescrib	rion:	
Address 2678 Hwy 201	· · · · · · · · · · · · · · · · · · ·	12 24 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	County Malhe	Latitude	Longitud	le	*
City Nyssa	State OR	Zip 97913	2/		Č 7 7	E 0: (()	WM.
(2) TYPE OF WORK:			270	У И	· ———— ¼		
	☐ Recondition ☐	Abandon	1al Lut	Lot Blo Well (or nearest address)		livision	
(3) DRILL METHOD		TAMELOU	2628 Hwy	201 Nyssa,	ŌR		
Rotary Air Rotary Mud	☐ Cable	. , , , ,	(10) CONTACTO	OT A SUPERIOR IT TO STREET			
Other	Cause Transfer Transfer	ကားပုံမှုအားရုံးကို ေကာင္	10	WATER LEVEI		יים מי	ഹാ
(4) PROPOSED USE:			***************************************	below land surface.		3-31	
• • • • • • • • • • • • • • • • • • • •	Industrial Irr	igation		lb. per so			
	Other		1	BEARING ZON	ES:		
(5) BORE HOLE CONST		-	Depth at which water w	as first found 18'			
Special Construction approval Yes	No Depth of Com	oleted Well 700 n	From	To	Estimated Flor	v Rate	SWI
Yes No	xi		18	30	30-40		1 8
· · · · · · · · · · · · · · · · · · ·	Amount		684	700	20-25		18
HOLE To Mater	_ SEAL	Amount					
10" 0 30 Cement		sacks or pounds 12 sacks					
."			(12) WELLLO)G: Ground eleva	4 :		
				Material		T	1
			Mon godi	MERCETIAL	From	To	SWI
low was seal placed: Method 🔲 A		□в	Top soil Sand & grave	1	17	17 29	<u>-</u> 18
Other <u>690-210-340 (1</u>		<u> </u>	Brown clay	*************************************	29	47	18
ackfill placed fromff. to			Blue clay		47	684	
ravel placed from to	ft. Size of gravel		Black sand		685	700	18
6) CASING/LINER:							
Diameter From To	Gauge Steel Plastic - 250 反	Welded Threaded					
Casing. 0" (1 +1 29							
						ļ	ļ
						ļ	<u> </u>
iner:							
							
rinal location of shive(s) 59 '							<u> </u>
(7) PERFORATIONS/SC	CREENS:			\$			
Perforations Method	÷	Same of the same					
Screens Type	Mater	ial					
· Glat	773-1-2-1						
Trom to the street Minutes		Casing Liner					
							<u> </u>
· · · · · · · · · · · · · · · · · · ·				***************************************		ļ	<u> </u>
· i						<u> </u>	
			Date started 3-20)_02		<u></u>	<u> </u>
					npleted3-25-	.77	
B) WELL TESTS: Minin	um testing time i		(unbonded) Water	Well Constructor Co	ertification:		
☐ Pump ☐ Bailer	M Air	Flowing	abandonment of this	e work I performed of well is in complian	on the constructi	on, alter	ation,
		☐ Artesian	standards. Materials	used and information	reported above at	e true to	my b
Yield gal/min Drawdown	Drill stem at	Time	knowledge and belief.	·.		_	
20–25	י 300	1 hr.	Signed Dan	e (Q_	WWC Nu		
			Digition 75 5 - 3			1-20-9	14
			(bonded) Water We	Il Constructor Cert	ification:		
emperature of water 78	Depth Artesian Flo	w Found	Wark Dertarmed on ti	ibility for the construits well during the cor		44	1
D	By whom		Work performed div	ring this time is in	n gammilianaa	4L A	
Vas a water analysis done? Yes			construction standard	Tilde - L	An Aba basa se		edge a
id any strata contain water not suitable			bolist	This report is the	to the pest of m	y knowie	
yas a water analysis done? Yes Oid any strata contain water not suitable Saity Muddy Odor Co- cepth of strata: 17-30			belief Signed	This report is the	WWC Nu	mber <u>l</u>	506

THE OTISHEY O	and first contribution of the first contribution be filed Martine.	T DEDODE	_
		L REPORT	No. 2/5/46 E-15da
	SOURCES DEPARTMENT. STATE OF M. OREGON 1960 V 2 0 1978 (Please type		No. 212112-1009
within :	30 days from the date	State Perm	it No
ÜL.	well driver RESOURCES DEPT. Do not write a	nove this line)	
1) OWNER:	SALEM, OREGON	(10) LOCATION OF WELL:	
ame Adrian		M-7 harrin	•
	an Oregon		
daress Aux II	1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -	N.E % S.E% Section 15 T. 21	R. 46 W.M.
2) TYPE O	F WORK (check):	Bearing and distance from section or subd	ivision corner
	그 그 물록하고 있는 사이들은 사고통이 가장 그 가장 하는 사람들이 살고 있다.		
ew Well 🙀	Diepening Reconditioning Abandon describe material and procedure in Item 12.	-	
	5-0	(11) WATER LEVEL: Completed	well.
´ ~	F WELL: (4) PROPOSED USE (check):	Depth at which water was first found	<u>388</u> st.
	riveli Domestic Mindustrial Municipal	Static level 4 ft. below la	nd surface, Date 10-23
	ored.		uare inch. Date
MCARING	INSTALLED: Threeded D Welded O		
· ·	timenaca [] Melotea Er	(12) WELL LOG: Diameter of w	ell below casing 8
" Diam.	و المستسم علا	Depth drilled 536 ft. Depth of co	mpleted well 536 ft.
		Formation: Describe color, texture, grain s	ize and structure of materials.
	froin ft. to ft. Gage	and show thickness and nature of each st with at least one entry for each change of fo	stum and anulfer negetested
PERFOR	ATIONS: Perforated? Yes XKNo.	position of Static Water Level and indicate	principal water-bearing strata.
pe of perforato	- 1 (1) (1) (1) (1) (1) (1) (1) (1) (1) (MATERIAL	From To SWL
e of perforatio	ons (Feek , C fn, by in	Sticky clay	0 42
p	perforations fromft. toft	Blue shale	42 388
p	perforations fromft. toft.	Coarse black sand	388 408
	perforations fromft. toft.	Fine sand & shale	408 432
) SCREEN	C. 1	Fine Sand stone & clay	432 536
nufacturer's N	vame		
ım Sle	Model No.		
ım Sle			
)			
) WELL T	ESTS: Drawdown is amount water level is lowered below static level		
as a pump test	made? Yo Yes No If yes, by whom? Page Bros		
_{eld:} 55	gal./min. with 395 ft. drawdown after 13 hrs.		
	William Control of the Control of th	-6	
iler test	gal./min. with ft. drawdown after hrs.		
tesian flow			
	8.p.m.		
perature of v	water 10 Depth artesian flow encountered		
	1	Work started 10-18-78 19 Com	oleted 10-23-78 19
CONSTR		Work started 10-18-78 19 Comp	
		Date well drilling machine moved off of we	10-24-78 19
ll seal—Materia	UCTION:	Date well drilling machine moved off of we Drilling Machine Operator's Certificati This well was constructed under	ny direct supervision
ll seal—Materia ll sealed from	UCTION:	Date well drilling machine moved off of we Drilling Machine Operator's Certificati This well was constructed under the materials used and information, report	ny direct supervision
ll seal—Materia ll sealed from meter of well	UCTION: al (1884 Cement land surface to 27 ti	Date well drilling machine moved off of we Drilling Machine Operator's Certificati This well was constructed under a Materials used and information report best knowledge and belief.	ny direct supervision. ed above are true to my
ll seal—Materiall sealed from ameter of well ameter of well	land surface to 27 the bore to bottom of seal 12 in bore below seal 8 in of tement used in well seal 5 sacks	Date well drilling machine moved off of we Drilling Machine Operator's Certificati This well was constructed under the materials used and information, report	ny direct supervision. ed above are true to my Date 11-2-7819
ll seal—Materiall sealed from meter of well meter of well mber of sacks	land surface to 27 the bore to bottom of seal 12 in. bore below seal 8 in.	Date well drilling machine moved off of we Drilling Machine Operator's Certificati This well was constructed under a Materials used and information report best knowledge and belief.	ny direct supervision. ed above are true to my Date 11-2-78 ₁₉
ll seal—Materiall sealed from meter of well meter of well mber of sacks	land surface to 27 the bore to bottom of seal 12 in bore below seal 8 in of tement used in well seal 5 sacks	Date well drilling machine moved off of we Drilling Machine Operator's Certificati This well was constructed under a Materials used and information report best knowledge and belief. [Signed] [Signed] Drilling Machine Operator's License N	ny direct supervision. ed above are true to my Date 11-2-78 ₁₉
ll seal—Materiall sealed from ameter of well ameter of well mber of sacks	land surface to 27 the bore to bottom of seal 12 in bore below seal 8 in of tement used in well seal 5 sacks	Date well drilling machine moved off of we Drilling Machine Operator's Certification. This well was constructed under a Materials used and information report best knowledge and belief. [Signed] Drilling Machine Operator's License Nowledge Operator's License Nowledge Operator's Certification:	ny direct supervision. ed above are true to my Date 11-2-78 ₁₉ o. 65
ll seal—Materiall sealed from ameter of well ameter of well mber of sacks w was cement	at 1864 Cement land surface to 27 bore to bottom of seal 12 in bore below seal 8 in of tement used in well seal 5 grout placed? Pressure grouted	Date well drilling machine moved off of we Drilling Machine Operator's Certification. This well was constructed under a Materials used and information report best knowledge and belief. [Signed] Drilling Machine Operator's License Nowledge Operator's License Nowledge Operator's Certification: This well was drilled under my jur	ny direct supervision. ed above are true to my Date 11-2-78 ₁₉ o. 65 Isdiction and this report is
ll seal—Materiall sealed from imeter of well imeter of well imber of sacks we was cement	uction: Interest Cement Interest Cement Interest Cement Interest Interest Intere	Date well drilling machine moved off of we Drilling Machine Operator's Certificati This well was constructed under a Materials used and information report best knowledge and belief. [Signed] Drilling Machine Operator's License Nowledge Operator's License Nowledge and a Contractor's Certification: This well was drilled under my jurt true to the best of my knowledge and	ny direct supervision. ed above are true to my Date 11-2-78 ₁₉ o. 65 Isdiction and this report is belief.
Il seal—Materiall sealed from ameter of well interest of sacks we was cement sea drive shoe any strata con	at 1864 Cement land surface to 27 bore to bottom of seal 12 in bore below seal 8 in of tement used in well seal 5 grout placed? Pressure grouted	Date well drilling machine moved off of we Drilling Machine Operator's Certificati This well was constructed under a Materials used and information report best knowledge and belief. [Signed] [Signed] [Apriling Machine Operator's License Note of the Machine Operator's Certification: This well was drilled under my jurt true to the best of my knowledge and Name PAGE BROTHERS DRILL (Person, firm or corporation)	ns 10-24-78 is on: ny direct supervision. ed above are true to my Date 11-2-78 is o. 65 isdiction and this report is belief. LING (Type or print)
Il seal—Materiall sealed from ameter of well interest of sacks we was cement sea drive shoe any strata con	uction: Interest Cement Interest Cement Interest Cement Interest Interest Intere	Date well drilling machine moved off of we Drilling Machine Operator's Certificati This well was constructed under the materials used and information report best knowledge and belief. [Signed] [Signed] Water Well Contractor's Certification: This well was drilled under my just true to the best of my knowledge and Name PAGE BROTHERS DRIL	ns 10-24-78 is on: ny direct supervision. ed above are true to my Date 11-2-78 is o. 65 isdiction and this report is belief. LING (Type or print)
ell sealed from ameter of well ameter of well mber of sacks w was cement	uction: al (1864 Cement land surface to 27	Date well drilling machine moved off of we Drilling Machine Operator's Certification. This well was constructed under the Materials used and information report best knowledge and belief. [Signed] (Apriling Machine Operator's License Note of the December of the Decembe	ns 10-24-78 is on: ny direct supervision. ed above are true to my Date 11-2-78 is o. 65 isdiction and this report is belief. LING (Type or print)
Il seal—Materia Il sealed from meter of well meter of sacks w was cement s a drive shoe any strata con se of water? hod of sealing	uction: al (1864 Cement land surface to 27	Date well drilling machine moved off of we Drilling Machine Operator's Certification. This well was constructed under a Materials used and information report best knowledge and belief. [Signed] (Applied Machine Operator's License Note of the best of my knowledge and Name PAGE BROTHERS DRILL (Person, firm or corporation). Address RT BOX 371= VAI	ns 10-24-78 is on: ny direct supervision. ed above are true to my Date 11-2-78 is o. 65 isdiction and this report is belief. LING (Type or print)
Ill seal—Material sealed from ameter of well ameter of well mber of sacks we was cement as a drive shoe a any strata compe of water?	land surface to 27 ti. bore to bottom of seal 12 in. bore below seal 8 in. of cement used in well seal 5 sacks grout placed? Pressure grouted used? **E Yes No Plugs Size location ft. ontain unusable water? Yes E No depth of strata g strata off cacked? Yes No Size of gravel:	Date well drilling machine moved off of we Drilling Machine Operator's Certification. This well was constructed under a Materials used and information report best knowledge and belief. [Signed] (Applied Machine Operator's License Note of the best of my knowledge and Name PAGE BROTHERS DRILL (Person, firm or corporation). Address RT BOX 371= VAI	in 10-24-78 is on: ny direct supervision. ed above are true to my Date 11-2-78 is o. 65 isdiction and this report is belief. LING (Type or print) E, OREGON 97918

RECEIVED NOTICE TO WATER WELL CONTRACTOR WATER WELL REPOR The original and first copy of this report are to be STATE OF OREGON 0CT 1 7 1974 State Well No. 215 46E - 22 bc filed with the (Please type or print) STATE ENGINEER State Permit No. -STATE ENGINEER, SALEM, OREGON 97370 within 30 days from the date (Do not write above this 18ALEM. OREGON of well completion. (10) LOCATION OF WELL: OWNER: County Mathier -Bearing and distance from section or subdivision corner (2) TYPE OF WORK (check): New Well ☐ Diepening ☐ Reconditioning ☐ Abandon ☐ If abandonment, describe material and procedure in Item 12. (11) WATER LEVEL: Completed well. (3) TYPE OF WELL: (4) PROPOSED USE (check): Depth at which water was first found Drive D Domestic Industrial I Municipal I Static level ft. below land surface. Date 5-9-Cable Jetted Irrigation [Test Well [Other Bored Artestan pressure lbs. per square inch. Date (5), CASING INSTALLED: Threaded | Welded | (12) WELL LOG: Diameter of well below casing . # / ft. to 308 ft. Gage 250 ." Diam. fro ft. Depth of completed well Depth drilled "Diam. from ft. fo ft. Gage ...
"Diam. from ft. Gage ... " Diam. from Formation: Describe color, texture, grain size and structure of materials; and show thickness and nature of each stratum and aquifer penetrated, with at least one entry for each change of formation. Report each change in Type of perforator used Perforated? [] Yes [] No. position of Static Water Level and indicate principal water-bearing strata. Size of perforations is in by <u> 28</u> 93 perforations from 130 perforations from (7) SCREENS: Well screen installed? Ves 130 160 160 189 Model No. 199 204 235 204 ft, to Set from Slot size 77/ 2.3ウ Slot size Set from .. ____f to 284 300 Drawdown is amount water level is lowered below static level Was a pump test made? Yes No If yes, by whom? dille 405 gal./min. with 30 ft. drawdown after 438 hrs. 478 442 41.9 504 Bailer test ft. drawdown after 104 303 esian flow perature of water Depth artesian flow encountered 1974 Completed 9Work started Date well drilling machine moved off of well (9) CONSTRUCTION: Well seal-Material used Wile- Lignet Drilling Machine Operator's Certification: Well sealed from land surface to 20 This well was constructed under my direct supervision. Materials used and information reported above are true to my Diameter of well boye to bottom of seal best knowledge and belief. . Diameter of well bore below seal Number of sacks of cement used in well seal . Number of sacks of behtonite used in well seal.
Brand name of bentonite Water Well Contractor's Certification: Number of pounds of bentonite per 100 gallons This well was drilled under my jurisdiction and this report is of water 65 lbs./100 gals. true to the best of my knowledge and belief. Was a drive shoe used? Dives No Plugs Size: location ... Name HHRULD (Type or print) Did any strata contain unusable water?

Yes No depth of strata Address P / X CNTARIC Method of sealing strata off [Signed] Was well gravel packed? [Yes No Size of gravel: A.A.L. ft. Contractor's License No. 223... Date ...

vel placed from ft. to

RECEIVED NOTICE TO WATER WELL CONTRACTOR The original and first copy WATER WELL REPO STATE OF OREGON OCT 1 7 1974 State Well No. 215 46E - 22 bc of this report are to be filed with the (Please type or print) STATE ENGINEER State Permit No. . STATE ENGINEER, SALEM, OREGON 973 within 30 days from the date (Do not write above this 1891EM, OREGON of well completion. (10) LOCATION OF WELL: OWNER: County Mashin-Bearing and distance from section or subdivision corner (2) TYPE OF WORK (check): New Well ☐ Diepening ☐ Reconditioning ☐ Abandon ☐ If abandonment, describe material and procedure in Item 12. (11) WATER LEVEL: Completed well. (3) TYPE OF WELL: (4) PROPOSED USE (check): Depth at which water was first found Drive (D Domestic Industrial | Municipal | Static level ft. below land surface. Date 5-9. Jetted Irrigation [Test Well [Other Bored Artesian pressure lbs. per square inch. Date (5) CASING INSTALLED: Threaded | Welded | (12) WELL LOG: Diameter of well below casing ." Diam. from T 1 tt to 308 ft Gage 250 Depth drilled ft. Depth of completed well Formation: Describe color, texture, grain size and structure of materials; and show thickness and nature of each stratum and aquifer penetrated, with at least one entry for each change of formation. Report each change in Type of perforator used Perforated? Yes P.No. position of Static Water Level and indicate principal water-bearing strata. MATERIAL. Size of perforations : in. by perforations from 18 93 perforations from 130 perforations from (7) SCREENS: Well screen installed? Yes 130 160 160 189 199 204 204 スろう .. Slot size ft, to Set from Slot size ... Set from 306 Drawdown is amount water level is lowered below static level Was a pump test made? Wes [No II yes, by whom? diville 405 ft. drawdown after 405 438 438 442 142 504 Bailer test gal./min. with ft, drawdown after esian flow perature of water Depth artesian flow encountered . Date well drilling machine moved off of well (9) CONSTRUCTION: Well seal-Material used Wart Greet Drilling Machine Operator's Certification: Well sealed from land surface to 20 This well was constructed under my direct supervision. Materials used and information reported above are true to my Diameter of well boie to bottom of seal .. best knowledge and belief. . Diameter of well bore below seal 2 Dailles Date Sept 30, 1924 [Signed] . X. Number of sacks of dement used in well seal .. Number of sacks of liefstonite used by well seal L Drilling Machine Operator's License No. .../a/ Water Well Contractor's Certification: Number of pounds of bentonite per 100 gallons This well was drilled under my jurisdiction and this report is of water 65 Was a drive shoe used? Tes No Plugs ____ Size: location ___

true to the best of my knowledge and belief.

firm or corporation)

CNTARIC

Contractor's License No. 223 Date Jeg

Did any strata contain unusable water?

Yes No

Was well gravel packed? ☐ Yes ☐ No Size of gravel:

vel placed from ft. to ft.

Method of sealing strata off

depth of strata

(Type or print)

wäter well repõrt of this report are to be STATE OF OREGON OCT 1 7 1974 State Well No. 215 46E - 22 bc filed with the (Please type or print) STATE ENGINEER State Permit No. STATE ENGINEER, SALEM, OREGON 973 within 30 days from the date (Do not write above this ISALEM, OREGON of well completion. 4 3 OWNER: (10) LOCATION OF WELL: Sw & NW & Section (2) TYPE OF WORK (check): New Well Deepening If abandonment, describe material and procedure in Rem 12. (11) WATER LEVEL: Completed well. (3) TYPE OF WELL: (4) PROPOSED USE (check): Depth at which water was first found Drive D Rotary Domestic Industrial | Municipal | Static level ft. below land surface. Date Cable Jetted 17 ō Bored [Irrigation ☐ Test Well ☐ Other Artesian pressure lbs. per square inch. Date Salara (A. Salar Life E. California) - 9 (5), CASING INSTALLED: Threaded | Welded | (12) WELL LOG: Diameter of well below casing . " Diam. from F # to 308 # Gage 25 Depth drilled ft. Depth of completed well " Diam. from ft. to ft. Gage Formation: Describe color, texture, grain size and structure of materials; and show thickness and nature of each stratum and aquifer penetrated, with at least one entry for each change of formation. Report each change in position of Static Water Level and indicate principal water-bearing strata. TERFORATIONS: Perforated? Yes No. Type of perforator used MATERIAL. Size of perforations : 3 . 1 in. by 18 perforations from 28 perforations from ____ 93 . ft. to perforations from . It. to 130 (7) SCREENS: | Well screen installed | Yes | Manufacturer's Name | Model No. 130 235 Set from tt, to Slot size 27/ Drawdown is amount water level is lowered below static level 317 Was a pump test made? Fixes | No If yes, by whom? dill 40,0 ft. drawdown after 438 442 504 Bailer test ft, drawdown after 104 505 perature of water Depth artesian flow encountered 19 74 Completed 9 -/2 Date well drilling machine moved off of well (9) CONSTRUCTION: Well seal-Material 65ed 10714 Drilling Machine Operator's Certification: This well was constructed under my direct supervision. Materials used and information reported above are true to my Well sealed from land surface to 20 Diameter of well bore to bottom of seal best knowledge and belief. (Drilling Machine Operator) Diameter of well bore below seal

Number of sacks of cement used in well seal [Signed] . Drilling Machine Operator's License No. -/p/ Number of sacks of lightonite used in well seal Brand name of bentimite Taylul Ben Number of pounds of bentonite per 100 gallons Water Well Contractor's Certification: This well was drilled under my jurisdiction and this report is 63 lbs./100 gals. Was a drive shoe used? ☐ Yes ☐ No Plugs __ Size: location _ Did any strata contain unusable water?

Yes No (Type or print) depth of strata ONTARIO ORCI Method of sealing strata off [Signed] Was well gravel packed? ☐ Yes ☐ No Size of gravel vel placed from _____ff. to ___ Ħ. Contractor's License No. (USE ADDITIONAL SHEETS IF NECESSARY)

RECEIVED

NOTICE TO WATER WELL CONTRACTOR

Cross section of the Treasure Valley in the Parma area for the TVHP (Treasure Valley Hydrologic Project):

Notes on Geology of the Parma area, Payette, Canyon and Owyhee Counties, Idaho

by Gregg Beukelman February 8, 1997 Department of Geosciences, Boise State University Boise, Idaho 83725

tele: 208-385-1631, fax 385-4061, email: gbeukelm@trex.idbsu.edu

Introduction

The report and enclosed data are a preliminary compilation of information along a transect extending NE-SW in the Parma area, to show the nature of the Late Cenozoic stratified sediments in the upper portion (~ 1000 feet) of the western Snake River Plain (Fig. 2). Included for each well along the transect are the well owner, Land Office Grid coordinates, surface elevation (± 10 feet), and diagrams of well construction and lithology. Lithology, taken from well drillers' reports on record at the Idaho Department of Water Resources and the U. S. Geological Survey, is plotted in detail where distinctive units of lithologic or hydrogeologic significance are well documented by the driller. Individual drillers' reports are attached to the report should the user wish more detail. Also included is a geologic cross section drawn to show correlatable distinctive lithologic and hydrogeologic boundaries encountered in each well. A 1:100,000 map of the area is included showing the route of the transect (A-A'), individual well owners and surface geology (taken from Othberg and Stanford, 1992).

Methods

The cross section included is a graphical presentation of subsurface lithologies based on water well drillers reports and data from a single deep exploration well (Highland L & L). Wells along a NE-SW transect were selected to ensure maximum section coverage and U. S. Geological Survey monitoring wells were included where possible. For each well included in the profile (1:24,000 horizontal) the stratigraphic section and well construction, as reported in the drillers logs, were plotted at a vertical scale of 1:1,200 (attached sheets). Correlations were made at this scale and all data digitized and reduced to produce the cross section in figure 2. Accuracy of all elevations is probably \pm 10 feet. Elevations of the contacts at the top of the lacustrine claystone (+1340-ft) and the underlying basalt (-1200-ft) are taken from a lithologic log accompanying the drillers report for the Highland L & L exploration well (Minus signs indicate elevation below sea level).

Structure

The structural nature of this area of the plain is inferred to be a normal fault-bounded graben. Faults are thought to be older inactive structures owing to their lack of surface expression and no offset of Pleistocene gravels and overlying Bonneville Flood deposits. Evidence for a major fault north of and adjacent to the Snake River is the rather monotonous

thickness of clay seen in the wells to the south. These sediments have been interpreted by Ekren and others (1981) to be Miocene Poison Creek Formation. Clays of this thickness are not encountered across the fault in the shallow wells to the north but occur only at much greater depth in the Highland L & L well, suggesting a minimum offset of 350 feet. Several other normal faults are interpreted based on offset of a very distinctive color boundary between overlying brown sediments and underlying blue sediments. One such fault occurring south of the Highland L & L well correlates with a similarly north facing normal fault that offsets basalt at depth (basalt at -1200-ft elevation in the Highland L & L well) as interpreted by Wood (1997). Based on the sediment color change boundary, the section appears to have no discernable dip (0.04° to the south between the Obendorf and City of Parma wells).

Stratigraphy

The sedimentary section contains Late Cenozoic fluvial and lacustrine deposits overlying a basement of basalt that varies in elevation along the profile from -1200-ft to -3200-ft. Surficial sediments include modern flood plain deposits, Bonneville Flood slack water fine sediments, gravel deposits of Pleistocene age, and older Tertiary age sediments. Much of the middle portion of the transect is mantled by silts and clays of Bonneville Flood slack water origin. These fine sediments commonly overlie terrace gravels including from youngest to oldest: Gravel of Boise Terrace, Gravel of the Bonneville Flood scoured Whitney Terrace, Gravel of Whitney Terrace, and Gravel of Deer Flat Terrace.

Beneath the surficial sediments occur a complex sequence of interfingering gravels, sands and clays which are interpreted to represent fluvial and shallow lacustrine deposits. This section contains an upper portion in which sediments are commonly some shade of brown and a deeper portion having sediments that are described as blue in drillers logs. The boundary between these color-defined units occurs at 2200-ft ± 50 ft elevation and appears in all well logs. The nature of this type of boundary is not well understood but is believed to reflect differences in depositional environment. The blue colored sediments are thought to be an indication of a chemically reducing depositional environment characteristic of lake deposits. The brown colors are more likely caused by oxidation of iron-bearing minerals under unsaturated conditions. Thus, these sediments are thought to represent alluvial, fluvial, and lake margin deposits which would be more apt to be oxidized. A complication to this interpretation is the effect of recharge by oxygenated waters on reduced (blue) iron minerals. Groundwater that is high in dissolved iron can be associated with the oxidation of reduced iron minerals at a contact between oxidizing and reducing conditions. Evidence in the Parma area, such as the uniform elevation of the contact and its lack of any identifiable deflection in the Boise River or Snake River areas (which might be thought to be recharge sources), suggests that this brown-blue contact is the result of original diagenesis and not greatly affected by later recharge. Therefore, this oxidation/reduction contact may well be useful for geologic interpretation of depositional environments.

North of the major fault in the Snake River area, the deeper part of the sedimentary section is composed of ~ 3000 feet of lacustrine claystone having an upper contact at +1340-ft elevation as recorded in the Highland L & L well. The geometry of the upper contact of this claystone cannot be determined from this cross section as only one well (Highland L & L) penetrates it to any depth. This contact is overlain by the fluvial lacustrine section containing a

significant aquifer section about 1290 feet thick. From water levels in nearby wells (Fig. 2) it appears that its upper 250 feet may be unsaturated. The base of this section, containing sand aquifers, is the top of the pro-delta mudstone facies interpreted by Wood (1994).

Basalt forms a volcanic basement to the sedimentary section. The Highland L & L well penetrates the top of basalt at -1200-ft elevation. Elsewhere along the transect, the topography of the basalt upper contact, as interpreted by Wood (1997) from seismic reflection data, mimics the graben form of the basin. Elevations of the basalt surface range from -2200-ft near the ends of cross section to about -3200-ft beneath the Boise River.

Hydrogeology

The static water level in wells on this transect vary greatly having a range of 180 feet and no easily discernable trends with the exception of a decline in the proximity of the Boise River. Static level in wells completed in the thick Tertiary sediment section north of the Boise Valley range from 2300-ft to 2380-ft elevation. Southward, within the Boise Valley and north of the Boise River, the level drops to about 2200-ft. Between the Boise River and the Snake River static water levels range from 2290-ft to 2340-ft with a trend of decreasing elevation nearer the Boise River. Only one well south of the Snake River is included in the transect so no trend south of the river is evident but the one water level is similar to those north of the river.

Two wells included in this cross section are part of the U.S. Geological Survey monitoring well program. The Skogsburg well (NW1/4,SW1/4,S.35,T6N,R5W) has a static water level of 2308-ft elevation as measured 3/21/96. The drillers found water in a sand and clay layer at a depth of 220-240 ft below the surface but the well is fully cased to its bottom at 322 ft making it likely that most of the water produced by this well is coming from a sand layer at its bottom (2073-ft elevation). The second well included in the monitoring program is the Paulson well (SE1/4,NW1/4,S.10,T4N,R5W) which has a static water level of 2340-ft elevation as measured 3/21/96. The drillers of this well report water in sandy and gravel units at 108'-125', 160'-165', 180'-250', and 300'-306' below land surface. The borehole is cased from the surface to the bottom (2117-ft elevation) with perforations in the bottom three feet making it likely that the principal water producer is a coarse sandy gravel at the bottom six feet of the borehole.

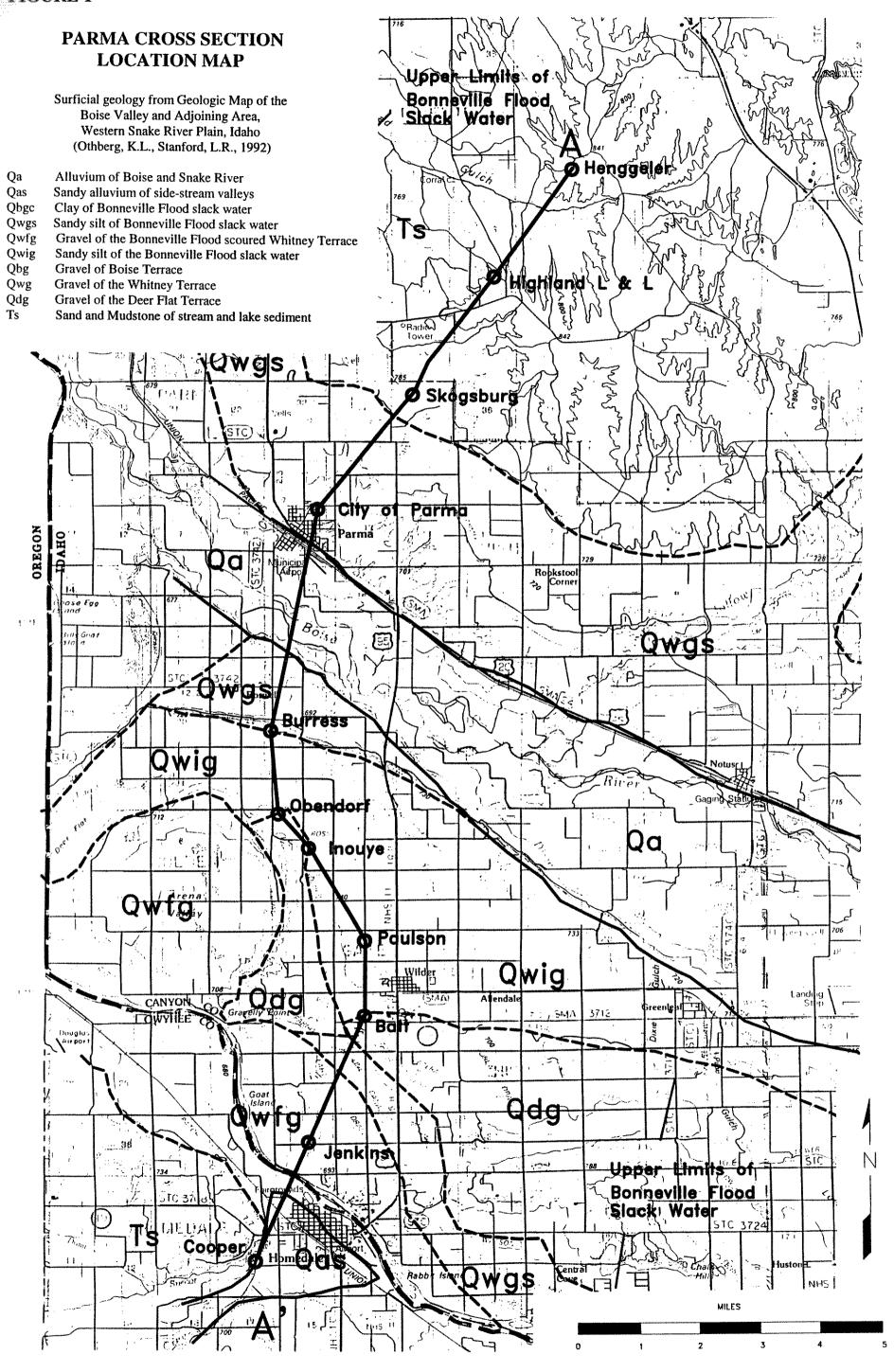
References

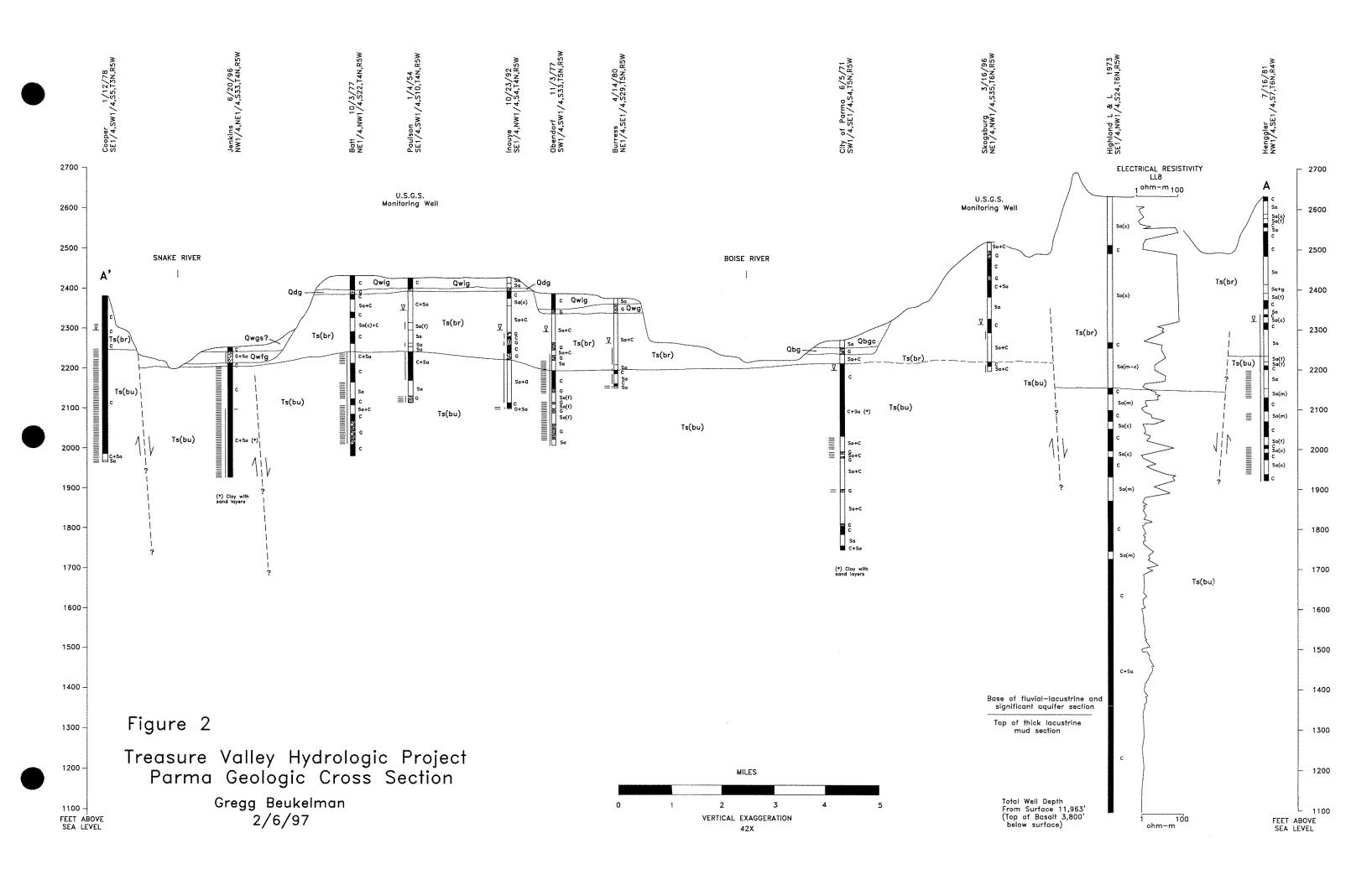
- Idaho Department of Transportation, 1994, 30 X 60 minute series topographic map of Boise, Idaho, scale 1:100,000.
- Idaho Department of Water Resources, 1997 microfiche file of drillers reports, Orchard Street Office.
- Othberg, K.L., and Sanford, L.R., 1992, Geologic map of the Boise Valley and adjoining area, western Snake River Plain, Idaho: Idaho Geological Survey, Geologic Map Series, scale 1:100,000.

- Ekren, E.B., McIntyre, D.H., and Bennett, E.H., 1981, Geologic map of Owyhee County, Idaho, west of Longitude 116° W: U.S. Geological Survey Miscellaneous Investigations Map I-1256, scale 1:125,000.
- U.S. Geological Survey, 1990, Files on wells in observation network, Collins Road Office.
- Wood, S.H., 1997, Structural contour map of the top of Miocene basalt basement rocks, western Snake River Plain, Idaho: Report for Idaho Department of Water Resources (2sheets, 1:100,000).
- Wood, S.H., 1994, Seismic expression and geological significance of a lacustrine delta in Neogene deposits in the western Snake River Plain, Idaho: American Association of Petroleum Geologists Bulletin, v. 78, no. 1, p. 102-121.

Figures and enclosures

- Figure 1 Map (1:100,000) showing cross section transect, wells used in cross section, and surficial geology.
- Figure 2 Cross section of geology and hydrogeology across the western Snake River Plain in the Parma, Idaho area.
- Figure 2a Legend for cross section
- Attached Eight panels of wells used in cross section showing lithology and well construction.
- Attached Drillers reports of selected wells.





Cross section of the Treasure Valley in the Notus area for the TVHP (Treasure Valley Hydrologic Project):

Notes on Geology of the Notus area, Gem, Payette, Canyon and Owyhee Counties, Idaho

February 18, 1997

by Gregg Beukelman
Department of Geosciences, Boise State University
Boise, Idaho 83725

tele: 208-385-1631, fax 385-4061, email: gbeukelm@trex.idbsu.edu

Introduction

The report and enclosed data are a preliminary compilation of information along a transect extending NE-SW from the Emmett Valley, southwest near the town of Notus and to the south of the Snake River (Fig. 1). The intent of this report is to show the nature of the Late Cenozoic stratified sediments in the upper portion of the western Snake River Plain (Fig. 2). Included for each well along the transect are the well owner, Land Office Grid coordinates, surface elevation (± 10 feet), and diagrams of well construction and lithology (attached). Lithologies, taken from well drillers' reports on record at the Idaho Department of Water Resources and the Boise office of the U. S. Geological Survey, are plotted in detail where distinctive units of lithologic or hydrogeologic significance are well documented by the driller. Individual drillers' reports are attached to the report should the user wish more detail. Also included is a geologic cross section drawn to show correlatable distinctive lithologic and hydrogeologic boundaries encountered in each well. A 1:100,000 map of the area Fig. 1) is included showing the route of the transect (A-A'), individual well owners and surface geology (taken from Othberg and Stanford, 1992).

Methods

The cross section included is a graphical presentation of subsurface lithologies based on water well drillers reports. Wells along a NE-SW transect were selected to ensure maximum section coverage and U. S. Geological Survey monitoring wells were included where possible. For each well included in the profile (1:24,000 horizontal) the stratigraphic section and well construction, as reported in the drillers logs, were plotted at a vertical scale of 1:1,200 (see attached sheets). Correlations were made at this scale and all data digitized and reduced to produce the cross section in figure 2. Accuracy of all elevations is probably \pm 10 feet. Elevations of the contacts at the top of the lacustrine claystone are interpreted from lithologic and electrical resistivity logs for the Oroco Oil Company Richardson #1 and Sundance Oil Company Caldwell Hunter Linning #1-30 deep exploration wells. The elevations for the top of the basement Miocene basalt are taken from a structural contour map of this contact (Wood, 1997).

Structure

The structural nature of this area of the plain is inferred to be a normal fault-bounded graben. Faults are thought to be older structures owing to their lack of surface expression and the absence of offset in Pleistocene gravels and overlying Bonneville Flood deposits. Evidence for a major north facing fault south of the Snake River is the rather monotonous thickness of clay seen in the Lineberger well. Nearby sediments having a similar appearance are mapped by Ekren and others (1981) as Miocene Poison Creek Formation. Thick clay units are not seen as similar elevations in the Asumendi well just across the river to the north suggesting a minimum offset of 400 feet. North of the Snake River, evidence suggests the presence of a five mile wide upthrown block (horst) based in elevations of the clay dominant section. This structure, as identified in the upper stratigraphy of the basin, correlates with a topographic high on the surface of the basement basalt (Wood, 1997). Several other normal faults, all having offsets less than 120 feet, are interpreted based on offset of a very distinctive color boundary between overlying brown sediments and underlying blue sediments. A south facing fault just north of the Lane well correlates spatially with a fault seen in the Miocene basalts but in the sediments appears to have an opposite sense of displacement. The north facing normal fault just north of the Gottesch well and along the southern margin of the Emmett Valley correlates well with the northwest extension of a similarly facing basement fault (Wood, 1997). Based on the sediment color change boundary, the section appears to have no discernable dip along the NE-SW oriented line of section (0.04° between the Frisby and Gottesch wells).

Stratigraphy

The sedimentary section contains Late Cenozoic fluvial and lacustrine deposits and an interbedded basalt unit overlying a basement of basalt that varies in elevation along the profile from -2000-ft to -3200-ft (Minus signs indicate elevation below sea level). Surficial deposits include modern flood plain deposits, Bonneville Flood slack water fine sediments, gravels of Pleistocene age, and older Tertiary age sediments. Low lying portions of the profile adjacent to the Boise and Snake River courses are mantled by sediments of Bonneville Flood slack water origin. There are typically silts and clays and commonly overlie terrace gravels including from youngest to oldest: Gravel of Boise Terrace, Gravel of Whitney Terrace, Gravel of the Wilder Terrace, and Gravel of Deer Flat Terrace. In the Emmett Valley a valley bottom gravel may be a modern alluvial deposit (Qal) of the Payette River or part of a older terrace with correlation to the Boise Terrace. A thin (approximately 10 feet) perched gravel occurring in the Gottesch well at 2390-ft elevation may also be a remnant of a Pleistocene terrace.

Beneath the surficial sediments is a complex sequence of interfingering lenses of gravels, sands, and clays which are interpreted to represent fluvial and shallow lacustrine deposits. This section contains an upper portion in which sediments are commonly some shade of brown, tan, or yellow and a deeper portion having sediments that are described as blue in drillers logs. The boundary between these color-defined units occurs at 2250-ft ± 75 ft elevation and appears in most well logs. The brown-colored unit is up to 300 feet thick beneath the uplands north and south of the Boise River, but has apparently been mostly removed by erosion by the Boise River Valley beneath the lowlands. The nature of this type of boundary is not well understood but is believed to reflect differences in depositional environment. The blue colored sediments are

thought to be an indication of a chemically reducing depositional environment characteristic of lake deposits. The brown colors are more likely caused by oxidation of iron-bearing minerals under unsaturated conditions. Thus, these sediments are thought to represent alluvial, fluvial, and lake margin deposits which would be more apt to be oxidized. Alternatively, it is also possible that recharge by oxygenated waters percolating through reduced (blue) iron minerals may oxidize formerly blue-gray colored deposits. Groundwater that is high in dissolved iron can be associated with the oxidation of reduced iron minerals at a contact between oxidizing and reducing conditions. Evidence in the area of the transect, such as the uniform elevation of the contact and its lack of any identifiable deflection near either the Boise River or Snake River (areas which might be thought to be recharge sources), suggests that this brown-blue contact is the result of original diagenesis and not greatly affected by later recharge. Therefore, this oxidation/reduction contact may well be useful for geologic interpretation of depositional environments.

North of the major fault in the Snake River area, the deeper part of the sedimentary section is composed of about 2800 feet of lacustrine claystone. The upper contact of this section is at 620-ft or 815-ft elevations as interpreted from the electrical resistivity logs of the Richardson #1 and Caldwell Hunter Linning #1-30 deep exploration wells respectively. The geometry of the upper contact of this claystone cannot be determined from this cross section as only the deep exploration wells penetrate it. Included within the claystone section is an approximately 400 foot thick volcanic unit of interbedded basaltic flows and tuffs. This basalt can be seen on seismic reflection data (Lariat Exploration-BB2 line) and in the Caldwell Hunter Sinning #1-30 well where its top is penetrated at -1000-ft elevation. The claystone section is overlain by a fluvial-lacustrine section containing a significant aquifer section a minimum of 900 feet thick. Beneath the uplands north of the Snake River the base of this section, containing sand aquifers, is the top of the pro-delta mudstone facies interpreted by Wood (1997).

Basalt forms a volcanic basement to the sedimentary section. Although no wells along the transect penetrates the top of the basalt, seismic reflection data from the Lariat Exploration-BB2 line suggest that its upper contact is at about -2400-ft elevation in the area of the Pioneer Irrigation well. Elsewhere along the profile, the topography of the upper contact of the basalt, as interpreted by Wood (1997) from seismic reflection data, mimics the graben form of the basin with the exception of the topographic high between the Snake River and the Boise River. Elevations of the basalt surface range from -2000-ft near the southern end of the cross section to about -3200-ft farther to the northeast.

Hydrogeology

With two exceptions, the static water level in wells along this transect vary only 130 feet in elevation. One exception is the Asumendi well located adjacent to the Snake River having a static water level of 2190-ft and the other is the Hillard well in the highlands between the Boise River drainage and the Payette River drainage that has a water level of 2580-ft. The Woods well in the Emmett Valley was completed into a thick section of clay to an elevation of 1940-ft and is flowing artesian. Most of the wells between the Emmett Valley and the Boise River are completed in the alluvial, fluvial, and shallow lacustrine section and behave as unconfined of semiconfined. Between the Boise River flood plain and the Snake River the static water level is

rather consistent, ranging from 2390-ft to 2340-ft elevation with a trend of decreasing elevation nearer both water courses. Only one well south of the Snake River is included in the transect so no trend south of the river has been studied, but the one water level is about 125 feet lower than the others north of the river.

Five wells included in the cross section are part of the U. S. Geological Survey monitoring well program:

- The Pioneer Irrigation well (SE1/4, NW1/4, S22, T4N, R4W) has a static water level of 2340-ft as measured on 9/19/96. The well is cased for the upper 65 feet if its total 132 foot depth making it likely that water is from a sand at 2220-ft elevation. This sand unit is behaves as a semiconfined aquifer.
- The Clement well (SW1/4, NW1/4, S36, T5N, R4W) has a water level of 2340-ft as measured on 3/21/96 and the upper 125 feet of its total 146 foot depth is cased. A sand unit at 2228-ft is the likely source of the water and is acting as a semiconfined aquifer.
- The Copp well located in the NE1/4, NW1/4, S24, T5N, R4W is completed to a depth of 448 feet in the upper alluvial, fluvial, and lacustine sediments. Its static water level is at 2373-ft elevation and is cased a total of 420 feet with screened intervals that allow sand lenses to supply water.
- The Hanson Livestock Co. well (NW1/4, NE1/4, S16, T5N, R4W) is completed to a depth of 333 feet and is cased its entire depth. Perforations in the bottom 70 feet and a gravel pack likely allow for supply of water by a higher unit (2250-ft) which behaves as an unconfined aquifer.
- The Lane well (NE1/4, SW1/4, S35, T6N, R4W) penetrates the upper section of alluvial, fluvial, and lacustrine deposits to a depth of 362 feet. The sediments in the lowest 70 feet of the borehole are all water bearing but the well is cased its entire depth making it likely that the sand unit at 2265-ft elevation is the primary water source.

References

- Idaho Department of Transportation, 1994, 30 X 60 minute series topographic map of Boise, Idaho, scale 1:100,000.
- Idaho Department of Water Resources, 1997 microfiche file of drillers reports, Orchard Street Office.
- Othberg, K.L., and Sanford, L.R., 1992, Geologic map of the Boise Valley and adjoining area, western Snake River Plain, Idaho: Idaho Geological Survey, Geologic Map Series, scale 1:100,000.
- Ekren, E.B., McIntyre, D.H., and Bennett, E.H., 1981, Geologic map of Owyhee County, Idaho, west of Longitude 116° W: U.S. Geological Survey Miscellaneous Investigations Map I-1256, scale 1:125,000.

U.S. Geological Survey, 1990, Files on wells in observation network, Collins Road Office.

Wood, S.H., 1997, Structural contour map of the top of Miocene basalt basement rocks, western Snake River Plain, Idaho: Report for Idaho Department of Water Resources (2 sheets, 1:100,000).

Figures and enclosures

Figure 1 Map (1:100,000) showing cross section transect, wells used in cross section, surficial geology, location of deep exploration wells, and seismic reflection line.

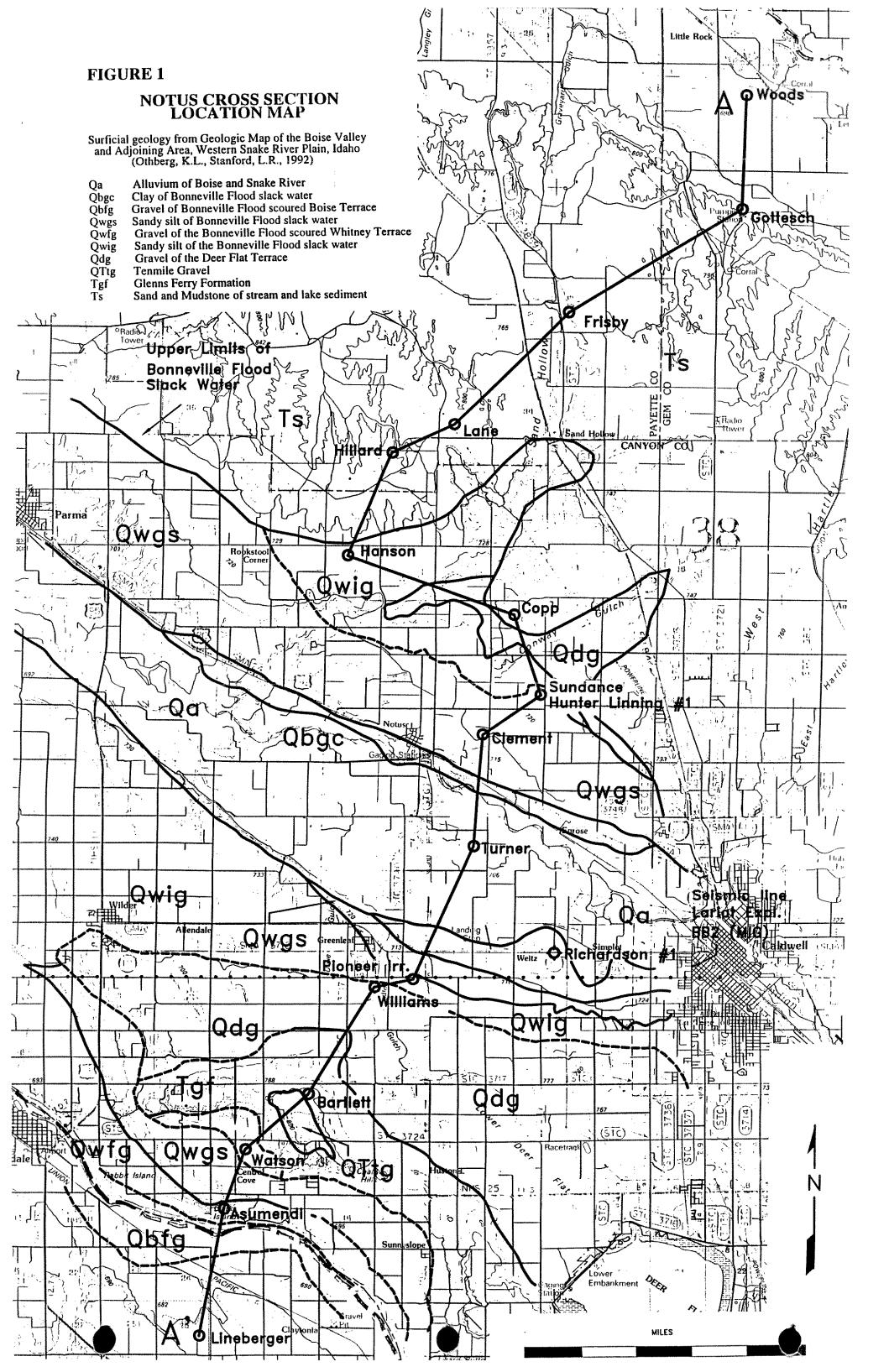
Figure 2a & b Cross section of geology and hydrogeology across the western Snake River Plain in the Notus, Idaho area.

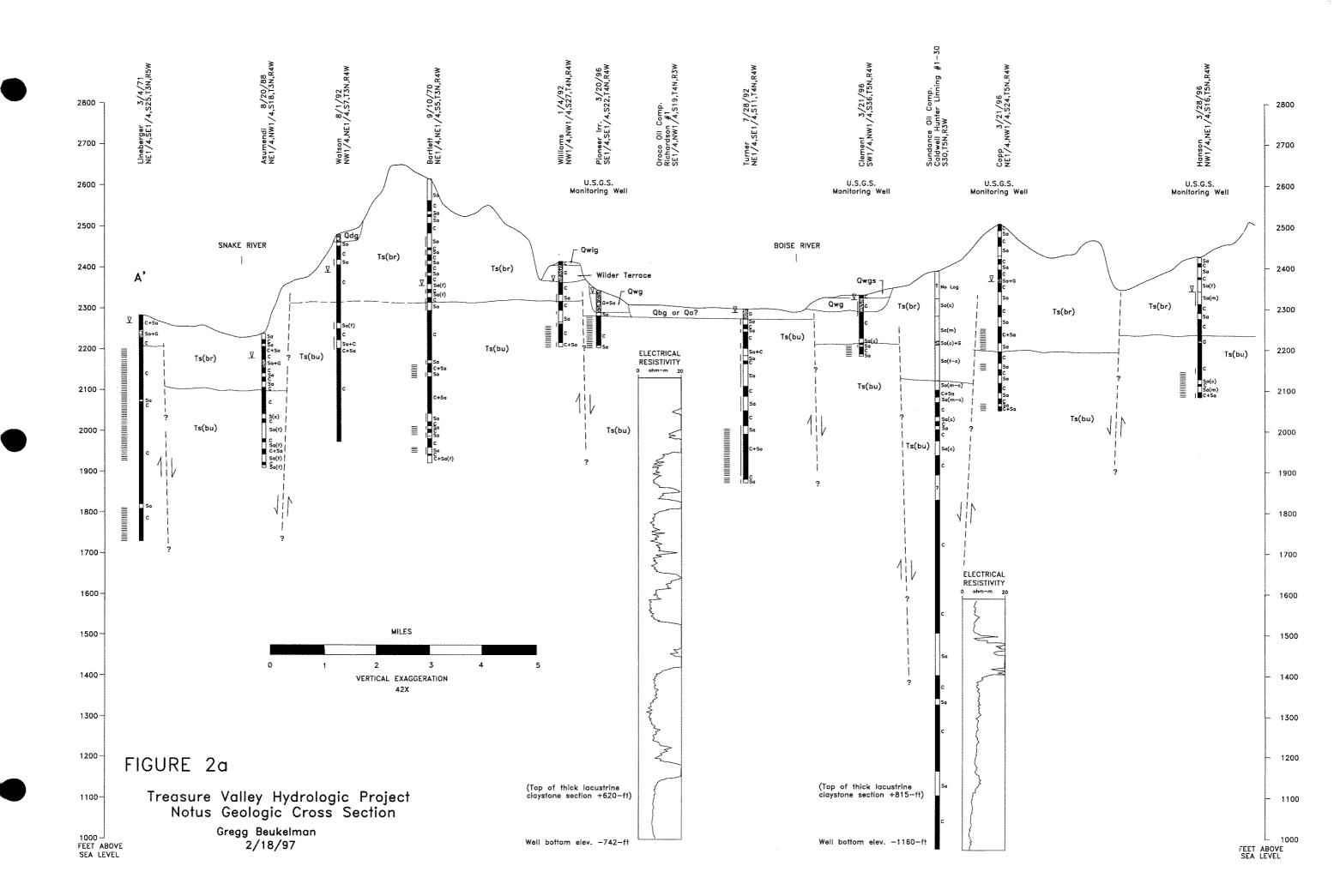
Figure 2a Legend for cross section

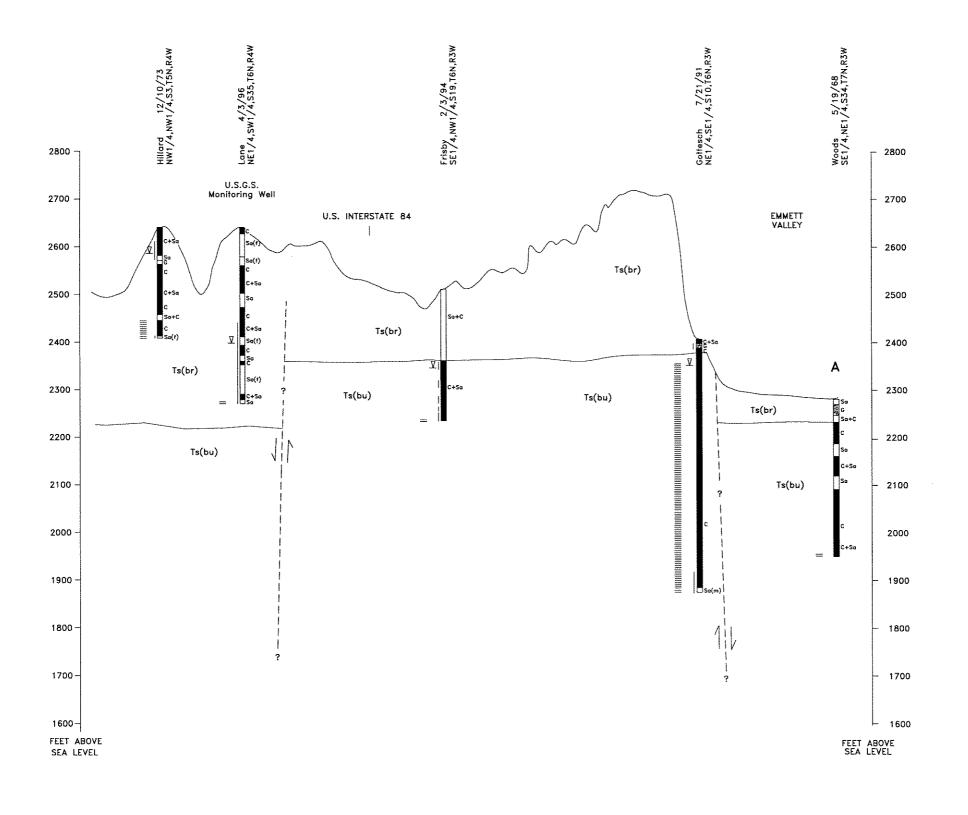
Attached Eleven panels of wells used in cross section showing lithology and well

construction.

Attached Drillers reports of selected wells.







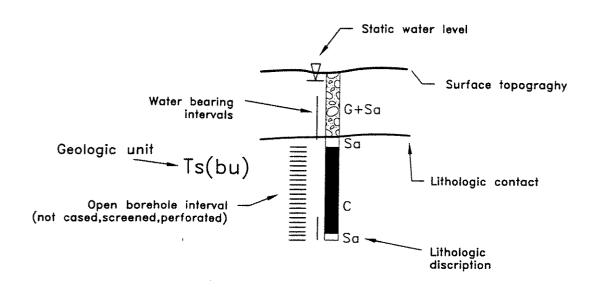


Treasure Valley Hydrologic Project Notus Geologic Cross Section Gregg Beukelman 2/18/97

FIGURE 2C

CROSS SECTION LEGEND

Diagram of Typical Well Interval



GEOLOGIC Units (After Othberg and Stanford, 1992)

Qa	Alluvium of Boise and Snake River
Qas	Sandy alluvium of side-stream valleys
Qbgc	Clay of Bonneville Flood slack water
Qwgs	Sandy silt of Bonneville Flood slack water
Qwfg	Gravel of the Bonneville Flood scoured Whitney Terrace
Qwig	Sandy silt of the Bonneville Flood slack water
Qbg	Gravel of the Boise Terrace
Qwg	Gravel of the Whitney Terrace
Tdg	Gravel of the Deer Flat Terrace
Ts	Sand and Mudstone of stream and lake sediment

WELL LITHOLOGIC ABBREVIATIONS

G	Gravel	
Sa(c,m,f)	Sand (coarse, medium, fine)	**
C	Clay	

When two sediment sizes are combined (C+Sa) the first sediment is the most abundant.

Color modifiers: Brown (Br) and Blue (Bu) are included for Tertiary sediments

State o .daho Department of Water Rescurees

WELL DRILLER'S REPORT

State law requires that this report be filed with the Director, Department of Worer Resources within 30

or contentions of the contraction of	900000	*******	34 14 14; W	· .		
1. WELL OWNER (Coper)	7. W	ATER	LEVEI.			
Name BaisE CUSCANC	S	alial een	ील्ड नेट्यस्य इंट्राइट्स	ST eet below land	Surta£i	! !
Address HEMEDRA - INPHC	F.	owing.	U Y	rs 12 No. G.P.M. III L. 18. Quality // 67	ow On Coa O	•
	A	rtesian i	closed ii	n pressurep s.	i,	
Owner's Permit No.	C	onn alle	d by	☐ Valve ☐ Cap	(.) Flug	
2. NATURE OF WORK	8 V	ELLTI	ESTDA	TA J		
¾ New well ☐ Deepened ☐ Replacement		Pump		P Bailer → D Ott	יפר	
13 Abandoned (Jescribe method of abandoning)	D	scharge (G.P.M,	Draw Down	i Hours Pu	report
-						
3. PROPOSED USE						
_						
☐ Comestic ☐ Irrigation ☐ Test ☐ Other (specify type)	9. L		OGIC (.06		
☐ Municipal ☐ Industrial ☑ Stock ☐ Waste Disposal or Injection	Hole Diam.	Frem	oth To	Meterial		Yes No
4. METHOD ORILLED	6	9	65	HAKO BRUWA?	CLAV.	
		115	128	STICKY BROW BREWN CLA	1 SEGNUS	
X Cable ☐ Rotory ☐ Dug ☐ Other		128	390	BLUCCLBY'		
5, WELL CONSTRUCTION	}			SANDY BLUC		
		105	 	BLACK SAND		
Dismeter of hole _6_ inches Total depth 405_feet			İ			
Cosing schedule: \$\forall Steel						
Thickness Plemeter From To	ļ	<u> </u>	 			1
inches feet feet	 	 				
inches feet feet	 	İ				1 1
inches inches feet feet						1
inches inches feet feet Was casing drive shoe used? Yes No						l i
Was a packer or seal used? Yes No			ļ			
Perforated? D Yes 57 No	 	 	╁		•	╂━╁━╌
How perforated?					· · · · · · · · · · · · · · · · · · ·	1
Number From To	<u></u>	ļ	<u> </u>			
perforations feet feet	 	-			,	┩━╃╼
perforations feet feet						+
perforations feet feet						
Well screen installed? ☐ Yes Ø No	 	1	-			
Manufacturer's name	 		 			++
Type Model No feet to feet						j l
Diameter Slot size Set from feet to feet	<u> </u>		-			
	—	<u> </u>	-			-
Gravel packed? ☐ Yes 전 No Size of gravel						
Placed fromfeet tofeet		 	ļ			
Surface seal depth 18 Material used in seal Cement grout	-	 	+			-
Puddling clay			İ			
Seeling procedure used Merry pit Temperary surface coming						
☑ Overbore to seel dapth	1			vi		
8. LOCATION OF WELL	1 10.	Uarl)		m ~ 2
Sketch map location must agree with written location.	<u> </u>	-U:K 3(2	. 160 1/	#K'-4-25'_finish	red _ <i>J.D.U/.</i> 2	-/5_
N	١					
	11.1	MILLE	TS CER	TIFICATION		
Subdivision Name.		Firm No	ma	TIEN WELL	DRL, Frm	m 23
W I I I I I I I I I I I I I I I I I I I		Address	RT-1 LICH	CHALE INA	HO no 1-	-,82. 2c
Lot Nu Block No	l			,	, ,	73
<u> </u>	1	Signed b	y (Frm	Official) X-convet	111-520	
County ClupHee			•	and	Ø.	
SE & Sal & Sec 5 T. P NER 5 PM			€ Dp	ereter)		
USE ADDITIONAL SHEETS IF NECESSARY FORWARD	<u>. </u>					

FORWARD THE WHITE COPY TO THE DEPARTMENT

DEPARTMENT OF WATER RESOURCE

USE TYPEWRITER OR BALLPOINT FEN

WELL DRILLER'S REPORT

State law requires that this report be filed with the Director, Department of Water Resources within 30 days after the completion or abandonment of the well.

within 30 days after the completion		l 1				
OWNER	NATER LEVEL	1				
Fred Batt (Wilder Hop Co.)	tatic water level feet below land surface. lowing? F1 Yes L1 No G.P.M. flow					
ss Rt. 1, Wilder, Idaho 83676	Temperature D.1.					
er's Permit No. <u>43-8'9-53</u>	Controlled by: [] Valve [] Cap []					
URE OF WORK	WELL TEST DATA					
lew well Deepened D Replacement	U Pump CI dents!	Pumped				
bandoned (describe method of abandoning)	Discharge G.P.M. Dysaddown					
OPOSED USE						
Domestic :□ Irrigation □ Text □ Other (specify type)	9. LITHOLOGIC LOG	Water				
Municipal Industrial Stock Waste Disposal or Injection	Die Depth Material arn. From To	Y 91 140				
ETHOD DRILLED	03 0 10 Tensoll 16 39 Hardpan					
Cable 103 Rotary Dug Dother	39 50 Sand, Gravel, Rock					
CONSTRUCTION	50 64 Sand & Pea Gravel					
ELL CONSTRUCTION Total depth 444 feet	73 39 Sand & Clay Mixed					
asing schedule: XX Steel Concrete	39 105 Clay 105 117 Sand & Pea Gravel W/some	CLay				
Thickness Dismeter 7 feet 200 feet	1112 120 Clav					
. 250 Inches 16 inches 220 feet 260 feet	The Lord Cond & Pan Gravel	mixed				
250 inches 16 Inches 300 feet 325 feet	124 140 Sand. Small Gravel a Clay					
. 250 Inches 16 Inches 420 feet	140 159 Clay 163 199 Sand & Pea Gravel W/some	Clay				
nches	leading laine Clay W/ some Sand					
was easing drive shoe used? Li Tes	202 214 Rive Sand & Pea Graves					
Was a cacker or seal used? William	last last loray Clay W/some Salid					
	Tack land to Med. Blue 3800					
Factory Li Knife Li Toloit	294 301 COATER SANG A PER LEAVEL					
Size of perforation inches by Te	301 320 Clay					
Number feet feet	320 331 Sand & Clay mixed 331 338 Fine to Coarse Sand & Pe	n Gravel				
perforationsfeetfeet	langing (Clay W/some Sang					
perforations feet fee perforations perforations feet feet feet feet feet feet feet fee	338 338 Clay 47 Some Sand & Small Grav	vel				
Mali mean inglish La Tas La La La La La La La La La La La La La	1/19/434 Clay					
A A CONTRACTOR ROSCOF DIVING	434 444 Clay & Shale					
Diameter 16 Slot size 66 Set from 115		- 				
Gravel packed? (X) Yes						
Placed from 30 Feet to Feet to	T					
Surface seal depth 30 Material used in Material Used in Well cuttle						
Slurry pit Temporary surface						
Seatility by a comment of the control of the contro		7				
♡ O∵erbore to seal di						
6. LOCATION OF WELL	10.	10 2 27				
Sketch map location must agree with written location.	Work started 9-27-77 finished	111-3-77				
Subdivision Name	11. DRILLERS CERTIFICATION					
\ 1117	Pete Cope Drilling Co.	Firm No. 217				
W E	Firm Name 10566 K-Bar-T Drive					
	7.1 mm 93765	Date 10-12-				
Lot No Block No	Address Boise, Idaho 83/73					
	Classed by (Eiron Official)	<u> </u>				
•	- 1	//				
County Canyon		ب مردن				
1 N/BR 5	(Operator)	<u> </u>				
Lot No Block No	Address Boise, Idaho 83745 Signed by (Firm Official)	Oate .				

A CONTRACTOR OF THE PARTY OF TH

Mp87 IDA	WELL	MENT OF WATE DRILLER'S RI Typewriter or Ballpoin	EPC		URC	ES	Twp_	Office Use O cted by Rge I/41/4	Sec		
DRILLING PERMIT NO. 6	3-96-W	0394.000	11. Y	ELL'		Baller	List: (2) Air	: : Long:		<u></u>	ì
OWNER ROLL			Ě	ж ож/м /2	n	300		Among Lavel 300	144		
My 12 Idua To	State I	Dm 93/26	匸					8	hole temp.	70	
LOCATION OF WELL by	legal descrip	tion:		r Temp. r Qualit		r comments:		oth first Water En			•
Sketch map location must agree with	h written location.		12.1	лно	LOG		Describe	repeirs or aband	ionment)	Weter	7
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Govi Lot	County_Ca		-	10	10	Sund	CA	mence.		χĹ	┨.
Late 1972	Long 2 6 2	St ung	Z	12	34	11		11.1	·Hh	4]
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6. DIVILL METHOD 32.5	3000			1.0				(株) (大) (大) (大) (大) (大) (大) (大) (大) (大) (大			긕
ASS S. F. F. CA. MORRIA VECT CONTRACTOR		All Mark and Charles	3 -		4-	3.7.	in waster to the control of	111 0 8 19	196 - 1	7 E	늯
7. SEALING PROCEDURE	B	東京を大学士(中国 中の大学 カン	-	-	+-			etment of Water R		4.5	
SEAL/FILTER PACK	AMOUNT:	A CONTROL OF	2	-	1_			ğırı Esiyg et e 42		(1)	
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A	Team jurismed free	SAN CARREST	<u> </u>	<u> </u>	┼			CEIVED	- 100 44	\vdash	
The second second second second	policy by tage of	CO of All Process	ŀ⊹┝		┪╌			COENTED	14144		
Was drive shoe used? (KY III N Was drive shoe seal tested? (III	Shoe Depth(s) 	4.7	. Š.					1-0-1-1338	1.00	╀	
8. CASING/LINER:	E CONTRACTOR OF THE PARTY	wer it will be to	×-		`		<u> </u>	TER RESOURCES		╂╾┨	
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D. Perforations Method	1 . J. C. S	ALL CANADA CONTRACTOR OF THE PARTY OF THE PA	20.75	Comple	eted D	on: 32	O ~	4 5*	· (M	esurat	/e)
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40 STATIC WATER LE	VEL OR ARTE	ESIAN PRESSURE:	• • • • •	Firm Na Firm Of		hine	Alex		Date 6	20	~ _2

. 9-185 (October 1950)

UNITED STATES

DEPARTMENT OF THE INTERIOR GEOLOGICAL SURVEY

WELL SCHEDULE 434/27/655/60/
Date In 1932 Field No. 4
Record by R. C. 2. 7 FEF 1-4-54 Office No. 10

		A COLUMN TO SERVICE OF THE PARTY OF THE PART	
coord by K. C. 3. F FEF 1-4-54 Office No. 19Ed 1d	Mosp State Highway Dest	where Dill Bulges Address	Address
topord by K. C. 3. B. L. S. Course of data Deciller &	Map State Highwa	2. Owner Dill Bulgen	Tenant

4. Elevation
6. Type: Dug, Tilled driven, bored, jetted Philipped Co.
7. Casing: Diam. Youthled to the the thirty of the thirty

8. Chief Aguifer gelle less From ft. to ft. to Others Others ft. Tent - A 10.54 above 75.

11. Vield: Flow G. M., Pump & O. M., Meas., Reparestored Drawdown It. after hours pumping 12. Use: Dom., Stock PS., RR., Ind., Irr., Obs.

Adequacy, permanence 0'K,

13. Quality Saffar Odor, color Saffar Odor, Color

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	10. 3. GOYERMENT PRINTING OFFICE 16-62801-3
	A SALE COVER

Unfit for

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PAGE A

13/11 Paulson

FORM B-1

LOG OF WELL (FOR FIELD COPIES OF DRILLERS LOGS)

STATE COUNTY LOCATION 4 TSEC.	NUMBER ANSON-	1501-105
DRILLERALE, HOSSON OF CARODRESS SOURCE OF DATA. DEITHERS	DRESS	
(APPEND CASING RECORD AND ADDITIONAL	S IONAL DATA ON	N NOTE BHEE
DRILLER'S DESCRIPTION	1	
Soil + Clay, aran	2 5	OEPTH O
Z		1
F083 4 50.00 1	46	101
N P		125
2000 1000	3.5	160
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Janay Rosinse jaba grant	4	306
		XX.

STATE OF IDAHO

USE TYPEWRITER OR

A492

DEPARTMENT OF WATER RESOURCES

BALLPOINT PEN

WELL DRILLER'S REPORT

State law requires that this report be filed with the Director, Department of Water Resources

within 30 days after the completion or abandonment of the well.

1. WELL OWNER Name Rris Incurye Address 23605 Rodeo In. Parma, ID 83660 Drilling Permit No. 63-92-H-0928-000 Water Right Permit No.	Flowing? Yes Artesian closed in Controlled by: Temperature Des	Valve : D Cap D F *F. Quality orbo artesion or semperature zone	Plug That I have a second
2. NATURE OF WORK Deepened Replacement Well diameter increase Modification Abandoned (describe abandonment or modification procedures	Pump Discharge Q.P.M.	Baller \$ Air D	Other
such as liners, screen, materials, plug depths, etc. in lithologic log, section 9.)	145	175	The mediate was account.
3. PROPOSED USE #0 Domestic Irrigation Monitor Monitor Waste Disposal or Injection Other (specify type)		Q Material	
4. METHOD DRILLED	12" 0 6 7 12" 6 16 8	op soil	er o og mon milit 🗶 🗎 i som legernyr læge 🗶 .
☐ Reverse rotary ☐ Auger ☐ Reverse rotary ☐ Cable ☐ Mud ☐ Other (Dackhoe, hydraulic, etc.)	12* 34 36 I 8* 36 54 I		(外が)。(200 guille 東で cultural guille 東で
8. WELL CONSTRUCTION Casing schedule: Steel Concrete Control	71 78 1 78 87 1	come brown sand, see clay was seed for grant sand, pen grant sand, pen grants sand, seed for grants sand, seed	ALOS ALOS ALOS 東 1990年 東 1
Thickness Diameter Prom 250 inches Inches Inches feet feet feet feet feet feet feet fe	• 116 123	Brown sand seconds of S Brown clay (1984) and S Coars gand seconds	Compared to the X
Was casing drive shoe used? IX Yes II No Was a packer or seal used? IX Yes XX No XX Perforated? IX Yes XX No XX XX XX XX XX XX XX XX XX XX XX XX XX	* 137 150 * 150 154	Brown sand pea Graves Brown sand pea Graves Sand pea Graves	rol instal x solver m Sentige Eight (Chi. x)
How perforated?	# 171 178 # 178 183 # 183 187	Brown clay crowden Brown sand, pea gro Brown clay cresses pro-	Avel X X X
perforations feet feet perforations feet Well acreen installed?	194 200	Brown Sand, pea gra Brown sand, pea gr Blue shale mays Black sand, pea gr	avel with X 12
Top Packer or Headpipe Bottom of Talipipe	220 308 2 - 308 317 317 325	Black sand, pea gr Gray clay 48444600 Black sand, pea gr	avel **** X *** avel **** X ***
Diameter Slot size Set from test to test to Set from Slot size Set from Slot size Set from Set to Set from Slot size Set from S	The same of the sa		STATES STATES OF THE STATES OF
Placed from	NDV 90 1993	NOV 2 7 1992	white was as
aling procedure used: I Sturry pti I Temp. surface casing II Overbore to seel depth Method of folining casing: II Threaded III Welded	or mands of the second of the	Department of Water Hose, courses	性性 医多种性 医二甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基
Describe access port Sanitary vell cap	Tion of the second	METALS.	10/23/92 ***
6. LOCATION OF WELL Sketch map location must agree with written location. Subdivision Name	I/We contify th	I make the company of	truction standards were
Lot No Block No	Firm Name R	iverside Drilling	n No. 333
Address of Well Site Same as above (give at least name of road)	Signed by Drift	ling Supervisor	Church of
T. 4 N TO OF C	(Opi	erator) Doll C	he Driffing Supervisor)

DEPARTMENT OF WATER RESOURCES

WELL DRILLER'S REPORT

Tes that this report be filed with the Director, Department of Water Resources

HOY IT IST

State law requires that this report on task with within 30 days after the completio	n or abandonment of	t she well. Dena tment of winter a	·
WELL OWNER	7. WATER LEVEL	3.4	r
Name Ray Obendorf	Elemine Ye	93 feet below land surface.	
Address Rt. 1. Parma, Idaho 83660	Temperature	oresque p.s.l.	
Owner's Permit No.	Controlled by:	C) Valve (1) Cap (2) Plug	
2. NATURE OF WORK	& WELL TEST DA	TA	
XX New well	: Pump 🔑 🛭	Bailer Li Other	
Absortioned (describe method of abandoning)	Discharge G.P.M.	Drawdown Hours Pun	
D Administration of the second			
3. PROPOSED USE			
□ Domestic the Irrigation □ Test □ Other (specify type)	9. LITHOLOGIC	LOG	
☐ Municipal ☐ Industrial ☐ Stock ☐ Weste Disposal	Hole Depth	Meurlal 1	Water Yes No
o metro	28 0 15	Topsoil, Hardpan, Clay	
A METHOD DRILLED	15 25 25 41	Brn. Clay, some Hardpan & Gr Brn. Clay	avel
□ Cable 121 Rotery □ Dug □ Other		Sand & C. avel	
	48 52	Pile Brn. Sand	
WELL CONSTRUCTION Diameter of hole		Brn. Clay w/some Sand	
Casing schedula: XX Steel	40 1107	Bro. Clay	
Casing schedule: XX Steel	174 122	Fine to Coarse Brn. Sand Gravel W/some Clay	
		Fine Sand	
370 Jacker 16 Inches 355 Test 375 Test	1 149 11 57	Brp. Clay W/Gravel	┵
inches inches feet feet		Gravel	
Inches	1 1331134	Fine to Coarse Sand Brn. Clay w/Fine Sand	
		Blue Clay w/some Sand & Gra	vel
Was a packer or seal used? C: Yes D: No Perforated? D: Yes D: No	202 215	Blue Sand W/some Clay	
Land manufactors Factors Knim Listen	215 219	Coarse Sand & Gravel	╼┼┼┼╾┤╿
1 Galage No. 100 TOTAL TOTAL		Péa Gravel W/some Clay	
Number From Te	777 733	Gravel	
Number From Te perforations feet feet feet	1 237 242	Pea Gravel	
perforations feet feet feet feet feet feet feet fee	242 26	Fine Sand W/traces of Grave	
i un o installari / 1.5 YML i FU	265 27	Gravel	
ROSCOE MOSS		7 Fine Sand w/some Gravel 3 Gravel	
		1 Coarse Sand & Gravel	
Diameter 16 Stot size 80 Set from 155 feet to 245 feet Diameter 16 Stot size 80 Set from 265 feet to 355 feet	1 301 30	9 Gravel	
No Size of gravet		O Fine Sand	 1
1 a		2 Gravel W/some Sand & Grave	
	362 37	4 Fine to Med. Blue Sand	
Sealing procedure used: Sealing Procedure used: Sturry pit Temporary surface		5 Sandstone	
Sealing procedure used: D Sturry bit casing " "Sweet		The same of the sa	
Casing System	oth <u>a carb</u>		
			KII
6. LOCATION OF HEEL	1	m was in the state of the state	4) (mg/)
Sketch map location must agree with written location.	10. Works	terted 10-11-77 finished 11-3	3-77
Subdivision Name	11. DRILLER	S CERTIFICATION	
	Firm Nan	Date Office Deliling Co. Inc.	No. 213
	į	10566 K-Bar-T Drive-	11-4-77
Lot No Block No	Address		2
County Canyon	Signed b	y (Firm Official)	-
4 er % Sec. 37 , T. 50 N/S, R. 50	E/W	(Operator) ATTICE STA	111
		7	
	. commison Tue	WHITE COPY TO THE DEPARTMENT	

G-390

WELL DRILLER'S REPORT

3. PROPOSED USE Domestic el frigation: In a resultation of the Company of the Comp S. WELL CONSTRUCTION Casing scheduler will be in Concert 1991

Thickness

A Solinches 1992

Inches 1992 perforations
perforations
perforations
Well screen installed/ " C: Williams
Manufacturer's name 2 D'ameter Slot alze Set from Gravel packed? Diver No Include to Company Placed from Surface seal depth Diversity Puddling city

Sealing procedure used? Distance placed from Sealing procedure used? Distance placed from Sealing procedure used? Distance placed from Sealing procedure used? Distance placed from Sealing Placed from Sealing 6. LOCATION OF WELLS Sketch map location must agree with write Subdivision Name 3Derr Aprilling of ME " SE " Sec. 19

STATE OF IDAHO DEPARTMENT OF WATER RESOURCE /ELUDRILLER'S REPO MET AND THE PROPERTY OF THE PRO

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LOCATION OF WELL	11. DRILLERS CERTIFICATION	5.5
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はアタタ Babbleton Name	Firm Mame DILL DOTT VELL DETILL TROP No. 142	
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30641

REPORT OF WELL DRILLER State of Idaho

REGENVED MAD 31 1987

Department of Reclamation

State law requires that this report shall be filed with the State Reclamation gineer within 30 days after completion or abandonment of the well.

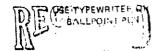
ingineer within yo days are-	Total
	Size of drilled hole: 24" Total death of well: 400/ Standing water
TELL OWNER: Same LA . 13 CA FAREAL /	Temp.
	Fahr. 6 Test delivery: //6/ gpm
ddress 76/2 CUERLAND Ka	orcfs Pump? X Bail
BUSE ISAHO	Size of pump and motor used to make test:
1 D No	Size of pump and most. The HP /NeTCR
naming of Copy (check): Replacement to the Land	Length of time of test: 20 Hrs. Min.
New well Deepened Abandoned	
Mew Well [A] Doopons	Drawdown: 700 it. Altouring flow cis
Water is to be used for: RRIGHTIEN	above land surface. Give flow cfs or gpm. Shutoff pressure:
METHOD OF CONSTRUCTION: Rotary X Cable	
Dug Other	No control Does well leak around casing?
(explain/	No control 1000
CASING SCHEDULE: Threaded Welded L	Yes No MATERIAL WATER
16 "Diam. from 6 ft. to 400 ft.	DEPTH MATERIAL WATER YES OR NO
ft. toft.	FROM TO
CASING SCHEDULE: Threaded // "Diam. from ft. to ft. "Diam. from ft. to ft. "Diam. from ft. to ft. "Diam. from ft. to ft. "Diam. from ft. to ft. "Thiskness of casing: /// Material:	
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	33 32 GRALEL MED
Steel X concrete vood other	39 58 CLAY BY
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	- 12 91 CLAY BI
(explain)	the state of the s
PERFORATED? Yes X No Type of	The Reserve Control of the Reserve Control of
perforator used: Mark Mar	
	140 188 CLAY Br
Size of perforations: 3/16. "by 3 " C129C perforations from /CC ft. to 29C ft. perforations from ft. to ft. perforations from ft. to ft. reforations from ft. to ft.	188 221 GRAVER + SOMP
c/29/perforations from //cc it. to 39/210	221 245 C194 B
perforations from	245 271 GRAVEL + CLAY
perforations fromft.	TTI 305 CLAN BLUE
perforations from No No	24 \$ 3/7 GATA = 17-3
perforations fromft. toft. perforations fromft. toft. WAS SCREEN INSTALLED? Yes NoX	3/8 3/1 CLAY Br
Manufacturer's name Model No.	341 357 SAND
Type Hodel No. Diam. Slot size Set from ft. to	
Diam. Slot size Set from ft. to Diam. Slot size Set from ft. to	St. 381 352 CRAILL - SAME
1) AB	
/A it. Material used in	
CASIA C Vester? Yes	
Till any etwata contain unusuuxt	
No. X Type of water: Depth of strataft. Hethod of sea	ling
Depth of stratait. Rechod of	
strata off:	
No. 1	
Surface casing used? Yes X No.	
Semented in place? Yes No	
Locate well in section	
Exerct Cu	
1/ The 124	Work started: MAR 7 1967
·	26 Work finished: 114R18 1967
Ton R	Work Tritished MANT This well was
764 R	drilled under my supervision and this report
Sec.	is true to the pest of my knowledge.
	Name / (4.7/12 Channel
	Address: 151 / Sax 151 F Louette ledel
	Signed by: Le Mi Street
	License No. 292 Date: 'May 29-47
Samuel Sa	
TOTAL COUNTY COUNTY	
" / N/8 B. 5 (2/V	1

Use other side for additional remarks

 $\frac{1}{\sqrt{3}}$

Form 203-7. 1/78

STATE OF IDAHO DEPARTMENT OF WATER RESOURCES



WELL DRILLER'S REPORT

State law requires that this report be filed with the Director, Department of Water Resources JUL 20 15. JUL within 30 nays after the completion or abandonment of the well,

				ern Regional filtics	
1. WELL OWNER	7. WATER LEVEL Western Regional Office				
Name sob Henzyeler	Flowing? C) Yet E) No G.P.M. flow Artesian closed in pressure p.s.i.				
	Flow	ing? () '	G.P.M. flov	Ť į	
Address Rt. #1 -Fruitland, Idano 3019	Cont	collari laur	['Valve [] Cap U) riug	
Owner's Permit No	Tem	nerature	of Quality		
Owner's Permit No.					
2. NATURE OF WORK	8. WELL TEST DATA				
I Deplegement	· Pump				
☐ New well ☐ Deepened ☐ Reprocentant ☐ Abandoned (describe method of abandoning)	Discharge G.P.M. Pumping Level Hours Pumped			Hours Pumped	
C Abaitonito (2000)	Diction 1.				
3. PROPOSED USE	9. LITHOLOGIC LOG				
□ Domestic ☑ Irrigation □ Test □ Municipal			J LU1	Water	
☐ Industrial ☐ Stock ☐ Waste Disposal or Injection ☐ Other		Depth To	Material	Yes No	
L) Otner		0 10	Sandy Top Soil, Wht.	. Clay & Byn Clay	
4. METHOD DRILLED		0 15	Brn. Clay		
Reverse rotary	l	5 35	Brn. Sand orn. Sand W/Clay S	treaks V	
☐ Rotary ☐ Air ☐ Hydraulic ☐ Reverse totary ☐ Cable ☐ Dug ☐ Other		35 35	Brn. Sand - Coarse		
		55 65	Brn. Sand -Getting	Finer	
5. WELL CONSTRUCTION	F 5	55 75 75 85	Firm Brn. Clay Brn. Sand		
Casing schedule: ※☐ Steel ☐ Concrete ☐ Other	1 3		Lt. Brn. Siltstone	& Firm Clay	
1 (2 Zeom 3/019		95 105	Firm Clay		
250 inches 10 inches 7 -10	1-1	05 115 15 145	Brn. Clay - Softer Clay 1 Tight Sand	- Brn.	
16 inches 525 feet 520 feet		45 165	Brn. Sand w/ clay	streaks	
.250 inches 16 inches 690 feet 690 feet		65 195	orn. Clay w/ Sand		
Was casing drive shoe used? Yes No	1	95 205			
Was a packer or seal used? Yes You		05 215	Cilty Rrn. Sand		
Have perforated? [] Factory Knife Torch		235 245	Gray Sand w/Sma.	Gravel (Thirty)	
Size of perforation inches by inches		245 255 255 275		o Medium	
Number From To perforations feet feet		275 290			
nerforations less	~ 1	290 295			
nerforations less	^ L	295 309		oarse Sand	
Well screen installed? ☑ Yes ☐ No Koscoe Hoss 70 410 Manufacturer's name Koscoe Hoss 70 410 Type 16® 30 Mpdel No. 470 Type 16® 30 Set from 505 feet to 525 1	1 1	J09 325 3 25 335		Streaks	
Manufacturer's name 3/10 Tunn 16* 30 Model No. 470	_	3 35 355	Wht. & Lt.Brn. Sc	nd - Coarse	
Diameter 16" Slot size 80 Set from 505 feet to 525 feet to 580			Lt.Brn.Sand - Med		
	et 5	390 395	Fine Sand w/ Clay Fine Sand - Gott	ne Coarser	
Gravel packed? 25 Yes LI No Li 3128 01 Gravel 705	e1	405 415	Brn. Sand-Med.To	Coarse w/ tripes gr.	
Surface seal depth Material used in seal: Cement gr	ut	415 42	Blue Clay W/trace	es of Sand Streams	
Puddling clay		425 43		Medium, Coarse	
Overbore to seal de	oth	471 49	5 Rlu Clay w/ Silt	v Sand Strks. at end	
Method of joining casing: Threaded Welded Solven		495 52	7 Fine to Med. San	d - Traces of Grave) y w/ fine Sand Stks.	
Weio	<u> </u>	5 27 53	D DK.BIN. & BIU CIE	y w/ Ilite Saile Squos	
Cemented between strata	10.		. Tuly 7 1981 a	7-16-81	
Describe access port		Work 1	started July 7,1981 fir	aisned / / / / / /	
(9) 医原尼虫	c 11.	DRILLE	RS CERTIFICATION d	00	
6. LOCATION OF WELL				construction standards were	
Sketch map location must agree with written location.	19		with at the time the rig was		
Subdivision Name DEC 15 1989	_		PETE COPE DRILLI	NG CO.INC. 213	
Department of Water Re		Firm Nar	P. U. Box 561		
EE Water Re	ources	Address	Meridian, ID. 83	Date July 16,1981	
Lot No Bleck No	11-11-12				
LOT NO DICCK NO	Signed by (Firm Official)				
S	and Treete Cope, Testions				
County			(Operator)	16 tonso	
NAV XSE & Sec. 7 . T. 6 N/1. R. 4 1	w.		JACK 3	Olleg	
/// 1/ 1/2 1/2 1/2 Sec			WHITE COPY TO THE DE	DADTMENT	

STATE OF IDAHO DEPARTMENT OF WATER RESOURCES

USE TYPE DEST A G

WELL DRILLER'S REPORT

State law requires that this report be filed with the Director, Department of Water Resources within 30 days after the completion or abandonment of the well.

			2.		
1. WELL OWNER	7. WATER LEVEL				
Name bob Heaoteler					
Address Bt, 61 - Fruitland, Id. 83.19	Static water level feet below land surface. Flowing? □ Yes □ No G.P.M. flow				
Address 4, 91 - IIII (1346, 14. 83.7)	Artesian closed-in pressure o.s.i.				
Owner's Permit No.	Controlled by: [] Valve [] Cap [] Plug Temperature OF, Quality				
		Total Transfer Transf	And		
2. NATURE OF WORK	8. WELLT	EST DATA			
□ New well □ Deepened □ Replacement	□ Pump □ Bailer □ Air □ Other				
☐ Abandoned (describe method of abandoning)	Dischurge G.P.M. Pumping Level Hours Pumped				
3. PROPOSED USE		· · ·			
D Demonte D t t it D = -					
☐ Domestic ☐ frrigation ☐ Test ☐ Municipal ☐ Industrial ☐ Stock ☐ Waste Disposal or Injection	9. LITHOL	OGIC LOG	-		
□ Other (specify type)	tole Depth		Water		
	Diam. From 1		Yes No		
4. METHOD DRILLED	555 5	55 Fine to Hed. Blu Sand 61 Blue Clay	1 . 1		
☐ Rotary ☐ Air ☐ Hydraulic ☐ Reverse rotary	561 3	63 Lt. Blu Sand - Hed. 10	Coarse 4/		
☐ Cable ☐ Dug ☐ Other		traces of pca gray	rel a Clay		
E WELL CONCEDURATION		90 Blue Clay 00 Fine Blue Sand			
5. WELL CONSTRUCTION	600 6	05 Blue Clay			
Casing schedule: Steel Concrete Other	605 6	10 Fine to Med. Sand u/7	T. of Gravel		
Thickness Diameter From To	010 0	スプリガムロ色 Clav			
inchesinches +feetfeet		50 Coarse Blue Sand			
inches inches feet feet inches Inches feet feet	645 6	45 Blu Clay w/ Sand Stre 688* Coarse Blue Sand	aks (Fine to Co		
inches Inches feet feet inches inches feet feet	0 0 8 6	75 Dk. Blu Sand-Getting F	iner w/ some C-		
Was casing drive shoe used? ☐ Yas ☐ No	♥ / → ∨	"	0% Pea Cravel		
Was a packer or seal used?	052. 0	72 Blue Clay			
Perforated? ☐ Yet ☐ No	- 693 /	05 Blue Clay w/Traces of	Fine Sand		
How perforated? ☐ Factory ☐ Knife ☐ Torch					
Size of perforation inches by inches					
Number From To perforations feet feet					
perforations feet feet		<u>जिल्ल</u>			
Perforations feet feet			51 il		
YYAN SCIENCE INCOMENSATOR, INC. V (**) N			2211111111		
Manufacturer's name Type		JUI 20 1			
Diameter Slot size Set from feet to feet		30: 20			
		Department of Water Rese	urces		
Gravel packed? Gravel No Size of gravel	[D] [Z	Mantas D			
Placed from feet to feet	11815	BETWEE			
Surface seal depth Material used in seal: Cement grout Puddling clay Well cuttings					
☐ Puddling clay ☐ Well cuttings Sealing procedure used: ☐ Slurry pit ☐ Temp, surface casing					
Overhore to seal death	DE				
Method of joining casing: ☐ Threaded ☐ Welded ☐ Solvent	Pepartition				
Weld		Mater Resources			
☐ Cemented between strata Describe access port					
Describe access por t	10.		77. 7.		
	**Ork Si	tarted finished	1/16/8/		
6. LOCATION OF WELL	11. DRILLER	S CERTIFICATION			
Sketch map location must agree with written location.					
N	1/We certify that all minimum well construction standards were complied with at the time the rig was removed.				
Subdivision Name	_				
	Firm Name Firm No 2/3				
W					
Lot No Block No	Address Date 7/16/8 \$				
	Signed by (Firm Official)				
S	and				
County	1				
N4 1 5 E 1/2 Sec. 7 , T. 6 DS, R. 1/ EW		(Operator)			

Cross section of the Treasure Valley in the Boise area, for the TVHP (Treasure Valley Hydrologic Project):

Notes on Geology of the Boise area, Ada County, Idaho

by Gregg Beukelman June 31, 1997 Department of Geosciences, Boise State University Boise, Idaho 83725

tele: 208-385-1631, fax 385-4061, E-mail: gbeukelm@trex.idbsu.edu

Introduction

The report and enclosed data are a preliminary compilation of information along a transect extending NNE-SSW from Boise to south of the Snake River in the Swan Falls Dam area (Fig. 1). The intent of this report is to show the nature of the Late Cenozoic stratified sediments in the upper portion of the western Snake River Plain (Fig. 2). Included for each well along the transect are the well owner, Land Office Grid coordinates, date of well completion, and diagrams of well construction and lithology (attached). Lithologies, taken from well drillers' reports on record at the Idaho Department of Water Resources and the Boise office of the U. S. Geological Survey, are plotted in detail where distinctive units of lithologic or hydrogeologic significance are well documented by the driller. Individual drillers' reports are attached to the report should the user wish more detail. Also included is a geologic cross section drawn to show correlatable distinctive lithologic and hydrogeologic boundaries encountered in each well. A 1:100,000 map of the area Fig. 1) is included showing the route of the transect (A-A'), individual well owners, and surface geology (taken from: Othberg and Stanford (1992), Malde (1989), and Mitchell and Bennett (1979)).

Methods

The cross section included in this report is a graphical presentation of subsurface geology based on water well drillers reports, geophysical data of several of the wells (Squires and others, 1992), and additional available geophysical data (Liberty, 1996). Wells along the transect were selected to ensure maximum section coverage although coverage was complicated by a lack of wells in the area just north of the Snake River. For each well included in the profile (1:24,000 horizontal) the stratigraphic section and well construction, as reported in the drillers logs, were plotted at a vertical scale of 1:1,200 (see attached sheets). Correlations were made at this scale and all data digitized and reduced to produce the cross section in figures 2a and b. Accuracy of all elevations is probably ± 10 feet. The elevations reported here for the top of the basement Miocene basalt are taken from a structural contour map of this contact (Wood, 1997). Locations of several of the faults that offset Late Cenozoic sediments were interpreted from the contour map of Wood (1997) and from a seismic reflection image of the Boise area (Liberty, 1996).

Structure

The structural nature of this area of the western Snake River Plain is inferred to be a normal fault-bounded graben. The principle south-facing fault zone of the northern margin the western plain is to the north of this section but antithetic and synthetic faults within the area bound smaller intrabasinal grabens. Major extensional faults within the western Snake River Plain are thought to be older structures owing to their lack of surface expression and the absence of significant offset in Pleistocene gravels. Major offset of sedimentary rocks and underlying volcanics beneath Boise is evident on the seismic section of Liberty (1996) with offset on one such fault, the Eagle-West Boise fault, of approximately 650 ft. Numerous faults showing small offsets of Tenmile gravels are exposed in quarries south of the city (Squires and others, 1992). However, the small amount of offset on these faults cannot be easily identified in the subsurface at the scale of the accompanying cross section. Faults shown on the cross section just north of the Quaternary Snake River Group basalts are interpreted from the offset geologic and hydrogeologic boundaries within the sedimentary section. These offsets correlate with faults identified in the basement basalts (Wood, 1997).

Stratigraphy

The sedimentary section contains Late Cenozoic fluvial and lacustrine deposits and Quaternary basalts that overlie a basement of basalt. The basement varies in elevation along the profile north of the Quaternary Snake River Group basalts from +1700-ft to -3000-ft (Minus signs indicate elevation below sea level)(Wood, 1997). Surficial deposits include modern flood plain deposits, terrace gravels of Pleistocene age, gravels and finer sediments of early Pleistocene to late Pliocene age, an extensive field of Quaternary age basalts that lie south of the Boise River Valley, and older Tertiary age sediments. Remnants of terrace surfaces are underlain by gravel deposits along the Boise River and include from youngest to oldest: Gravel of Boise Terrace, Gravel of Whitney Terrace, Gravel of the Sunrise Terrace, and the Gravel of Gowen Terrace. All these terrace gravels are identified at elevations below the Gravels of Tenmile Creek. In the area of the transect, a intracanyon basalt flow mantles the Fivemile surface. Othberg and others (1995) report a whole-rock K-Ar age of 0.974±0.130 million years for the Fivemile basalt. A widespread surfical deposit of Pleistocene gravel, sand, silt, and clay overlies much of the Quaternary age basalt in the southern portion of the area.

Beneath the surficial sediments in the Boise Valley is a complex sequence of interfingering lenses of gravels, sands, and clays which are interpreted to represent fluvial and shallow lacustrine deposits. The complex geology of this important aquifer is poorly understood in any detail. Previous work by Squires (1992) has provided evidence of broad depositional systems with characteristic signatures including, a buried alluvial fan system in southeast Boise that grades westward into the river and lake sediments.

Squires (1992) pointed out the importance of color change in sediments, the Bojse fan aquifer sediments being characteristically brown, and blue colors being reported for sediments more basinward. This section of this study contains an upper portion in which sediments are commonly some shade of brown, tan, or yellow and a deeper portion having sediments that are described as blue or grey in drillers logs. The boundary between these color-defined units occurs at 2320-ft ± 80 ft elevation and appears in most well logs. The brown-colored unit is up to 800

feet thick beneath the uplands south of the Boise Valley with perhaps as much as 500 feet removed by erosion of the Boise River Valley. The nature of this type of boundary is not well understood but is believed to reflect differences in depositional environment. The blue colored sediments are thought to be an indication of a chemically reducing depositional environment characteristic of lake deposits. The brown colors are more likely caused by oxidation of iron-bearing minerals under unsaturated conditions. Thus, these sediments are thought to represent alluvial, fluvial, and lake margin deposits which would be more apt to be oxidized. Alternatively, it is also possible that recharge by oxygenated waters percolating through reduced (blue) iron minerals may oxidize formerly blue-gray colored deposits. Groundwater that is high in dissolved iron can be associated with the oxidation of reduced iron minerals at a contact between oxidizing and reducing conditions. Therefore, caution should be used in using color change in the interpretation of depositional environments.

The southern portion of the transect is underlain by Quaternary basalt deposits that are intermittently covered by a mantle of sedimentary deposits (Caldwell-Nampa sediments of Mitchell and Bennett, 1997). The thickness of these basalts is not well known but maximum thickness encountered along this transect is approximately 600 feet (Swan Falls Farm). The base of these basalts show depth variations with two distinct low points. The more southern low point (elevation 2440-ft in the Swan Falls Farm well) may represent the location of the fourth stage of the ancestral Snake River canyon suggested by Malde (1991). The more northern of the low points, at an elevation of about 2280-ft. in the DeShazo well, lies within a NW-SE alignment of similarly thick accumulations of Quaternary basalts and may represent the eruption of these basalts into an eroded stream channel or into a fault-bounded topographic depression (Wood, personal communication).

Hydrogeology

The static water level in wells along this transect vary little within the lacustrine and fluvial sediments of the northern portion of the profile (north of the Collins well) but southward, the water table slopes toward the Snake River at about 0.1°. Wells completed through the basalts in the south of Boise Valley generally are good producers with large discharge volumes and little drawdown. These wells appear to be drawing water from porous intervals within the basalt such as cinder units as well as from the sediments beneath the basalts.

Wells completed into the fluvial and lacustrine sediments within the Boise Valley can be grouped geographically. The wells south of the Taggart St. well (Nicholson, Tenmile, and MAC) are all completed to a depth of about 2200-ft elevation. These wells are targeting an aquifer in thick sand units from elevations below about 2450-ft. The Taggart St. and Cassia St. wells to the north on the other hand, are completed to depths below 1800-ft elevation and are probably getting the majority of their water from a series of thin sand units below 2200-ft elevation.

References

Idaho Department of Transportation, 1994, 30 X 60 minute series topographic map of Boise, Idaho, scale 1:100,000.

- Idaho Department of Water Resources, 1997 microfiche file of drillers reports, Orchard Street Office.
- Liberty, L.M., 1996, Seismic reflection imaging of the Boise Geothermal Aquifer; Center for Geophysical Investigation of the Shallow Subsurface, Boise State University, Technical report BSU CCGISS 96-05, p. 18.
- Othberg, K.L., and Sanford, L.R., 1992, Geologic map of the Boise Valley and adjoining area, western Snake River Plain, Idaho: Idaho Geological Survey, Geologic Map Series, scale 1:100,000.
- Malde, H.E., 1989, Geologic map of the Bureau Formation in the Sinker Butte and Wild Horse Butte Quadrangles, Southwestern Idaho, U.S. Geological Survey Miscellaneous Field Studies Map MF-2063-B, scale 1:24,000.
- Mitchell V.E., and Bennett, E.H., 1979, Geologic map of the Boise Quadrangle, Idaho, Idaho Bureau of Mines and Geology, Geologic Map Series, scale 1:250,000.
- Squires, E., Wood, S.H., and Osiensky, J.L., 1992, Hydrogeologic framework of the Boise aquifer system, Ada County, Idaho; Idaho Water Resources Research Institute Research Technical Completion Report-14-08-0001-G1559-06.
- Wood, S.H., 1997, Structural contour map of the top of Miocene basalt basement rocks, western Snake River Plain, Idaho: Report for Idaho Department of Water Resources (2 sheets, 1:100,000).

Figures and enclosures

- Figures 1a and 1b Map (1:100,000) showing cross section transect and wells used in cross section.
- Figures 2a and 2b Cross section of geology and hydrogeology across the western Snake River Plain to the Snake River from the Boise, Idaho area.
- Figure 2c Legend for cross section
- Attached Twelve panels of wells used in cross section showing lithology and well construction.
- Attached Drillers reports of selected wells.